DATAQ INSTRUMENTS

The way PC-based instrumentation should be

DI-785

32-channel Desktop/Rack mount system for DI-5B modules

DI-788

32-channel Desktop/Rack mount system for DI-8B modules

User's Manual

Manual Revision D

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Warranty and Service Policy

Product Warranty

DATAQ Instruments, Inc. warrants that this hardware will be free from defects in materials and workmanship under normal use and service for a period of one year from the date of shipment. DATAQ Instruments' obligations under this warranty shall not arise until the defective material is shipped freight prepaid to DATAQ Instruments. The only responsibility of DATAQ Instruments under this warranty is to repair or replace, at its discretion and on a free of charge basis, the defective material.

This warranty does not extend to products that have been repaired or altered by persons other than DATAQ Instruments employees, or products that have been subjected to misuse, neglect, improper installation, or accident.

DATAQ Instruments shall have no liability for incidental or consequential damages of any kind arising out of the sale, installation, or use of its products.

Service Policy

1. All products returned to DATAQ Instruments for service, regardless of warranty status, must be on a freight-prepaid basis.

2. DATAQ Instruments will repair or replace any defective product within 5 days of its receipt.

3. Customers who wish to return material to DATAQ Instruments for any reason must contact the company and request a Return Material Authorization (RMA) number before returning the material. This includes any in-warranty, out-of-warranty materials being return shipped to DATAQ Instruments for any reason. To obtain an RMA number contact DATAQ Instruments technical support by telephone at 330-668-1444, or by e-mail at support@dataq.com.

4. For in-warranty repairs, DATAQ Instruments will return repaired items to the buyer freight prepaid. Out of warranty repairs will be returned with freight prepaid and added to the service invoice.

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1. Introduction

Congratulations on your purchase of a DI-78x data acquisition system. This manual describes how to connect and use the hardware. The DI-785 is designed specifically to accept DI-5B modules. The DI-788 is designed specifically to accept DI-8B modules — the world's smallest fully functional isolated analog signal conditioner.

Features

Common features of the DI-785 and the DI-788 are:

- High sample throughput rates - up to 180,000 Hz.
- Synchronous distributed data acquisition through CAT-5 Ethernet cables (connected through the **Expansion** port).
- Per channel software-configurable gain ranges of 1, 2, 4, and 8.
- 14-bit analog-to-digital converters for high-resolution measurement accuracy.
- Supports analog pre- and post-triggering of data acquisition based on the level and slope of a specified channel.

The **DI-785** has the following additional features:

- Accepts up to 32 DI-5B amplifier modules accommodating virtually any industrial signal.

The **DI-788** has the following additional features:

- Accepts up to 32 DI-8B amplifier modules accommodating virtually any industrial signal.

Analog Input

DI-78x products provide 32 analog inputs designed specifically for use with DI-5B (model DI-785) or DI-8B (model DI-788) signal conditioning modules that allow your analog signals to be converted into 14-bit digital data via an on board A/D converter. Both input-to-output and channel-to-channel isolation is provided by DI-5B and DI-8B signal conditioning modules.

Analog Output

The D/A subsystem of DI-78x products features two buffered, 12-bit D/A converters for outputting analog data. Access is provided via the 37 pin D sub connectors on the rear of the instrument (see "Digital I/O and Monitor Out" on page 22 for pin location). DI-78x instruments feature a software-programmable output range of ±10V.

Digital Input and Output

The DI-785 and DI-788 contain 8 digital input and 8 digital output lines for input/output operations. These lines provide an interface for the transfer of data between user programs and a peripheral device connected to the instrument. Digital inputs can monitor alarms or sensors with TTL outputs, while digital outputs can drive TTL inputs on control or measurement equipment.

Software

All software required to record and playback waveforms is included with the purchase of any DI-785 or DI-788 model including WINDAQ/LiteAcquisition and Playback software and the Dataq Instruments TCP/IP Manager.

WINDAQ® Recording and Playback Software

WINDAQ Acquisition and WINDAQ Waveform Browser allow you to record and playback data acquired through your instrument. WINDAQ is an invaluable resource for analyzing data. A special version of WINDAQ Waveform Browser, WINDAQ Waveform Browser Navigator (free), is required to read waveform data recorded from multiple daisy-chained units.

WINDAQ Acquisition software can be used to record waveforms directly and continuously to disk while monitoring a real time display of the waveforms on-screen. It operates and displays waveform signals in real time at the full sample rate of the instrument being used. There are three versions of WINDAQ Acquisition software available for use with DI-78x Instruments: WINDAQ/Lite, WINDAQ/Pro, and WINDAQ/Pro+. WINDAQ/Lite is free but is restricted to recording throughput rates of 240 Hz with a DI-78x. WINDAQ/Pro is an extra-cost option allowing you to record data at the speed of your data acquisition system (180KHz throughput). WINDAQ/Pro+ is an extra-cost option allowing you to record different channels at different sample rates at the speed of your data acquisition system (180KHz throughput). This software is accessed through the Dataq Instruments TCP/IP Manager which can be found in the Start menu under the WINDAQ program group called **TCP/IP Manager**.

WINDAQ Waveform Browser playback software (also known as “WWB”) offers an easy way to review and analyze acquired waveforms. A built-in data file translator allows the user to display multiple waveforms acquired by WINDAQ Acquisition software or any of a wide range of data acquisition packages. The software’s disk-streaming design allows data files of any length to be graphically displayed rapidly, in normal or reverse time directions. Seven standard cursor-based measurements, frequency domain, and statistical analysis functions help simplify waveform analysis and interpretation. WINDAQ Waveform Browser is free and installed when installing WINDAQ Software.

TCP/IP Manager

The DATAQ Instruments TCP/IP Manager allows you to effectively manage and run multiple DI-78x instruments installed or connected to your PC or your Network—or even over the internet. This software can be found in the Start menu under the WINDAQ program group called **TCP/IP Manager**. Access WINDAQ Acquisition software, configure auto-record settings, manage DATAQ networked devices, and more in this easy-to-use point and click environment. See “TCP/IP Manager” on page 16 for more information.

WINDAQ Waveform Navigator

The WINDAQ Waveform Browser Navigator allows you to display and scroll through data recorded synchronously using multiple daisy-chained Dataq Ethernet devices including the DI-785, DI-788, DI-720, and DI-730 instruments. Access the application via the Windows program group specified during WINDAQ Software installation (default is *Start > Programs > WINDAQ > WWB Navigator*). See “WinDaq Waveform Navigator” on page 2 for more information.

Help

All WINDAQ software utilizes context-sensitive help. Help may be accessed through the Help menu or by pressing the F1 key with any feature selected. This will take you directly to the Help topic most relevant to that particular function or feature. Help topics discuss in detail each function available in the software.

2. Specifications

Analog Inputs

Number of Channels:	32 configured for signal conditioned inputs, multiplexed
Channel Configuration:	Defined by signal conditioning module
Input Impedance:	Defined by signal conditioning module
Input offset voltage:	Defined by signal conditioning module
Channel-to-Channel crosstalk rejection:	75db @ 100kHz sample throughput rate
Channel-to-Channel Isolation:	500V
Input-to-Output Isolation:	1000V
Offset temperature coefficient:	±10 PPM/°C, plus signal conditioning module
Analog Frequency Response:	Defined by signal conditioning module
Digital Filtering:	Peak, valley, average
Measurement Range:	Defined by signal conditioning module on a channel-by-channel basis. ***Note**: Not all amplifier modules support ± excitation, but all support ± channel inputs.*
Measurement Accuracy:	±0.25% of full scale range, ±100 μV
Resolution:	1 part in 16,384 (14-bit)
Gain:	1, 2, 4, 8 software selectable per channel.
CJC Accuracy:	±1.5°C plus signal conditioning module (10-minute warm-up; still air; 2-amp max current draw for backplane; average IOS mode).

A/D Characteristics

Type:	Successive Approximation
Resolution:	14-bit
Sample Rate Timing Accuracy:	50 PPM
Sample Rate Timing Resolution:	62.5 ns
Integral Linearity Error:	±1LSB
Minimum Conversion Time:	4 microseconds

Scanning Characteristics

Maximum sample throughput rate:	Single Unit: 180,000 Hz Multiple Units (daisy-chained): 150,000 Hz per unit
Minimum sample throughput rate:	0.01526 Hz
Maximum scan list size:	34 entries
Sample buffer size:	2kb

Digital I/O

Bits:	8 inputs and 8 outputs

Input voltage levels:	Min. required “1” 2V; Max allowed “0” 0.8V
Connections:	Two 37-pin D-sub male

Calibration

Calibration Cycle:	One year

Interface

Type:	Ethernet 10/100Base-T
Connector:	RJ-45
Protocol:	TCP/IP
Server Type:	DHCP or Fixed IP

General

Front Panel Indicators:	Power LED and Active LED
Input connectors:	Eight, removable sixteen position terminal blocks.
Operating Temperature:	0°C to 50°C
Storage Temperature:	-55°C to 125°C
Dimensions:	16.5W × 18.5D × 3.5H in. (41.9W × 47D × 8.9H cm.)
Weight	
DI-785 with no modules:	11 lbs. (5 Kg)
DI-785 with 32 DI-5B modules:	15.44 lbs. (7 Kg)
DI-788 with no modules:	11 lbs. (5 Kg)
DI-788 will 32 DI-8B modules:	12 lbs. (5.44 Kg)

Power Characteristics

Type:	AC Line
Voltage Range:	88 to 264 VAC rms
Current Range:	1.3A@115VAC 0.8A@230VAC
Frequency Range:	47 to 63 Hz

3. Installation

Unpacking

The following items are included with each DI-785 or DI-788 instrument. Verify that you have the following:

- Your DI-785 or DI-788 Instrument.
- DI-5B or DI-8B modules as ordered (separately).
- Eight removable screw terminal blocks for signal connections.
- DATAQ Electrician's screwdriver to connect signal leads.
- AC Power Cable.
- The *WINDAQ Resource* CD. The *WINDAQ Resource* CD contains all software required to run your instrument. If you ordered WINDAQ/Pro or WINDAQ/Pro+ recording software (an extra-cost option), there will be a sticker with a password on the sleeve of your CD-ROM. This password will give you access to that software. If you did not order WINDAQ/Pro or WINDAQ/Pro+ recording software, the WINDAQ/Lite recording software will be available to you for free without a password.

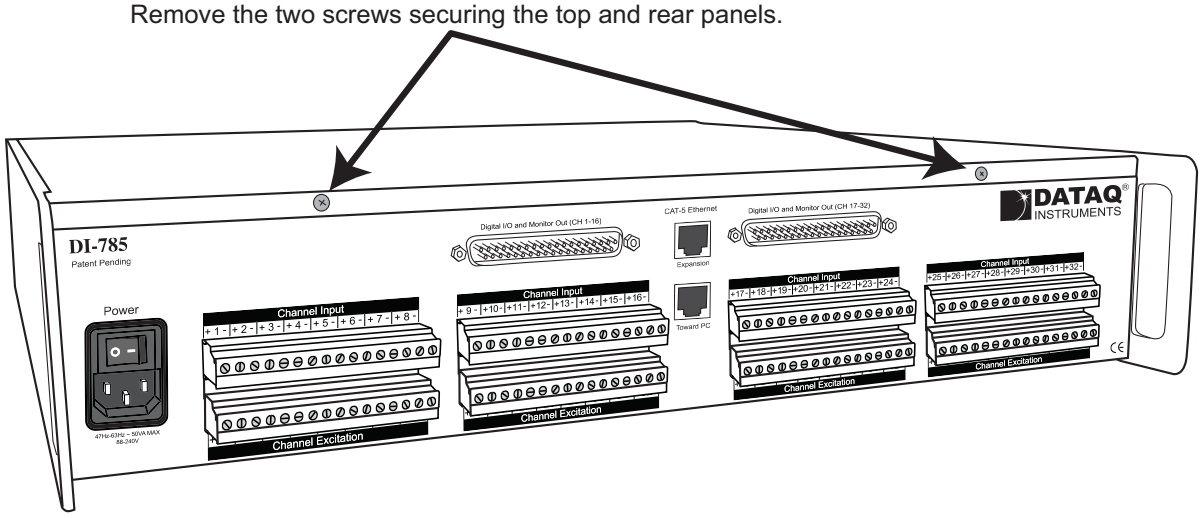
If an item is missing or damaged, call DATAQ Instruments at 330-668-1444. DATAQ support will guide you through the appropriate steps for replacing missing or damaged items. Save the original packing material in the unlikely event that your unit must, for any reason, be sent back to DATAQ Instruments.

Installing DI-5B modules (DI-785 Instruments only)

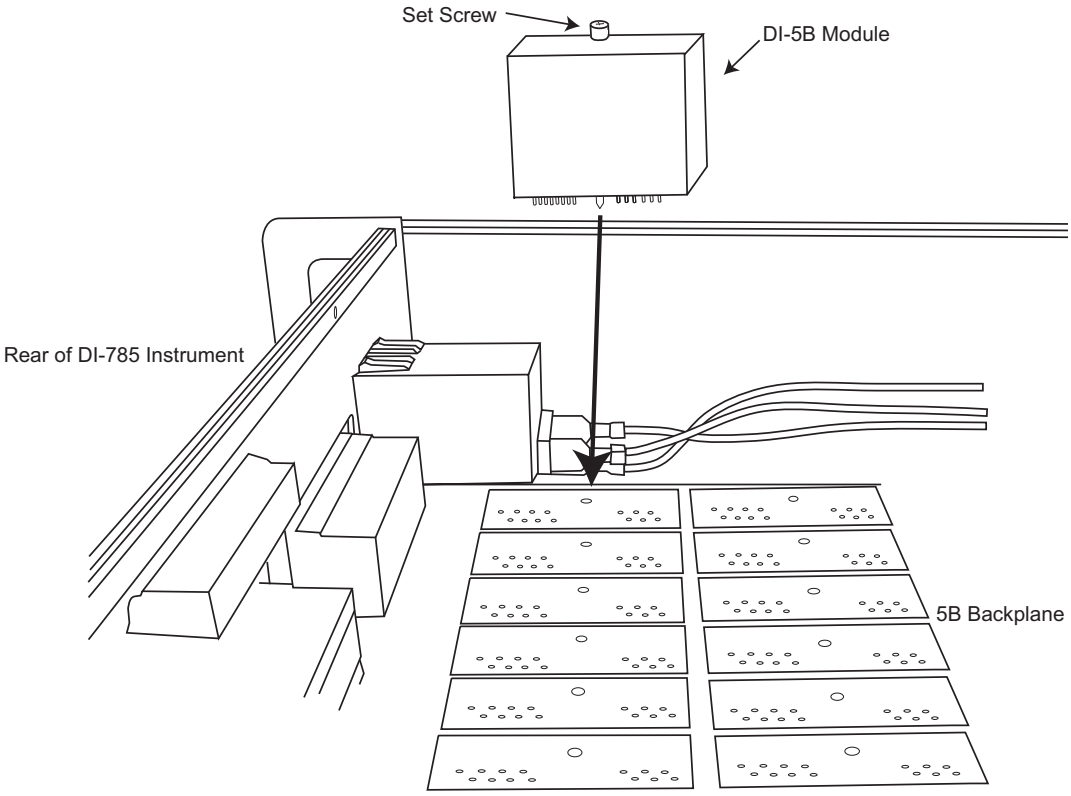
DI-5B modules are installed on the DI-5B backplanes located on two instrument circuit boards inside the casing. DI-785 instruments require you to remove the top panel to access the backplanes. Up to 32 DI-5B modules may be installed in each device.

1. Unplug the device and make sure there is no power to the instrument.

2. Remove the top panel and reveal the 5B backplanes by removing the two top screws on the rear panel of the instrument and sliding the top panel out of the casing.



3. Plug the DI-5B module firmly into one of the channel positions clearly labelled on the backplane and secure with the set screw. DI-5B modules are installed on (or removed from) the socketed DI-5B backplane (located on the circuit board) and are secured with a non-removable mounting screw. Each channel position is labeled “CHANNEL 1 (17),” “CHANNEL 2 (18),” etc. on the socketed backplane. The DI-5B modules can be mixed or matched in any combination suitable for the application and are identical in pinout and size.



4. Print or copy **Appendix A1** (see “Appendix A1: DI-5B Modules Installed” on page 57) and write the modules installed at each location. Keep this sheet handy to ensure proper connections.

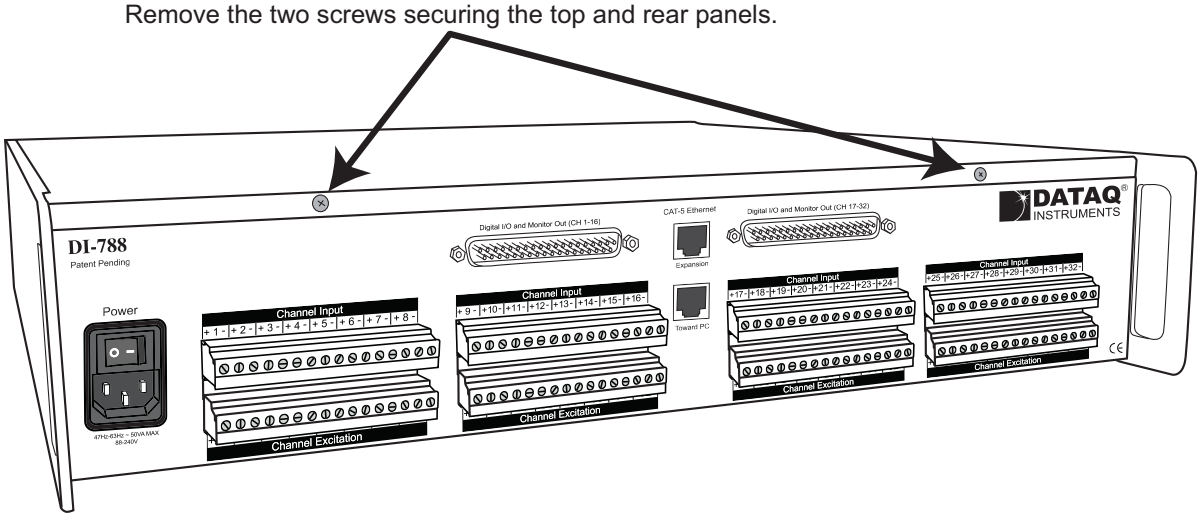
5. After all modules are installed and indicated on the appendix sheet, reassemble the instrument making sure not to overtighten the casing screws.

Installing DI-8B Modules (DI-788 Instruments only)

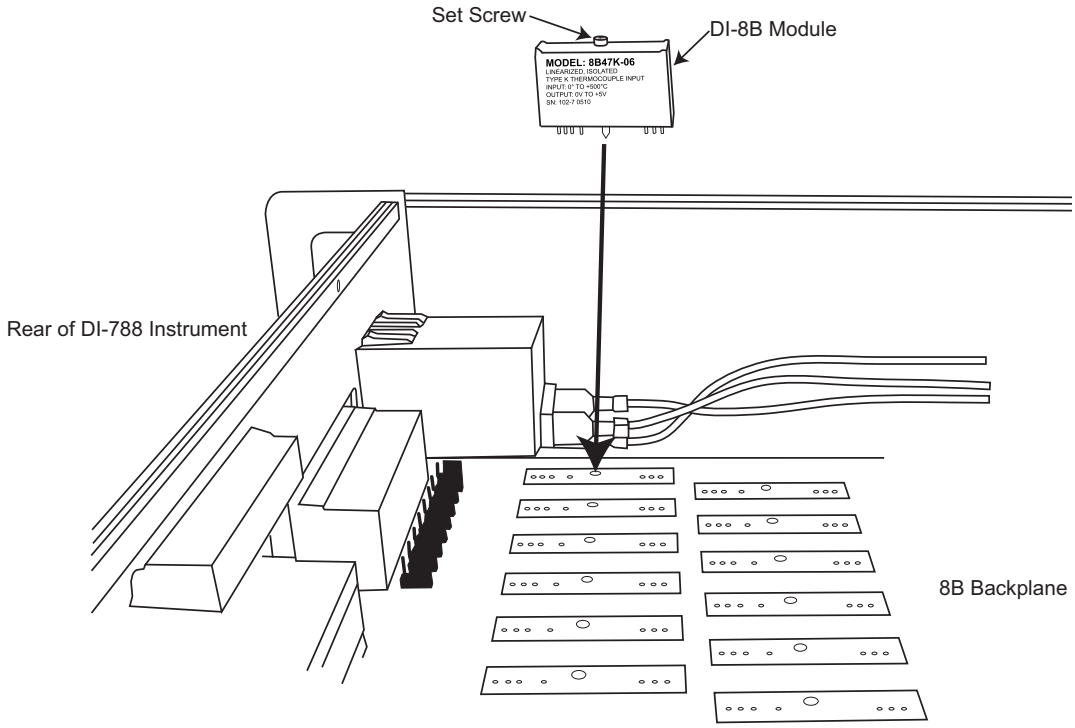
DI-8B modules are installed on the DI-8B backplanes located on two instrument circuit boards inside the casing. DI-788 instruments require you to remove the top panel to access the backplanes. Up to 32 DI-8B modules may be installed in each device.

1. Unplug the device and make sure there is no power to the instrument.

2. Remove the top panel and reveal the 8B backplanes by removing the two top screws on the rear panel of the instrument and sliding the top panel out of the casing.



3. Plug the DI-8B module firmly into one of the channel positions clearly labelled on the backplane and secure with the set screw. DI-8B modules are installed on (or removed from) the socketed DI-8B backplane (located on the circuit board) and are secured with a non-removable mounting screw. Each channel position is labeled “CHANNEL 1 (17),” “CHANNEL 2 (18),” etc. on the socketed backplane. The DI-8B modules can be mixed or matched in any combination suitable for the application and are identical in pinout and size.



Note: *If your are installing a thermocouple module you **must** enable the Cold Junction Compensation jumper for that channel (see “Enabling CJC for DI-8B47 Thermocouple Modules (DI-788 models only)” on page 8 for more information).*

4. Print **Appendix A2** (see "Appendix A2: DI-8B Modules Installed" on page 58) and write the modules installed at each location. Keep this sheet handy to ensure proper connections.

5. After all modules are installed and indicated on the appendix sheet, reassemble the instrument making sure not to overtighten the casing screws.

Enabling CJC for DI-8B47 Thermocouple Modules (DI-788 models only)

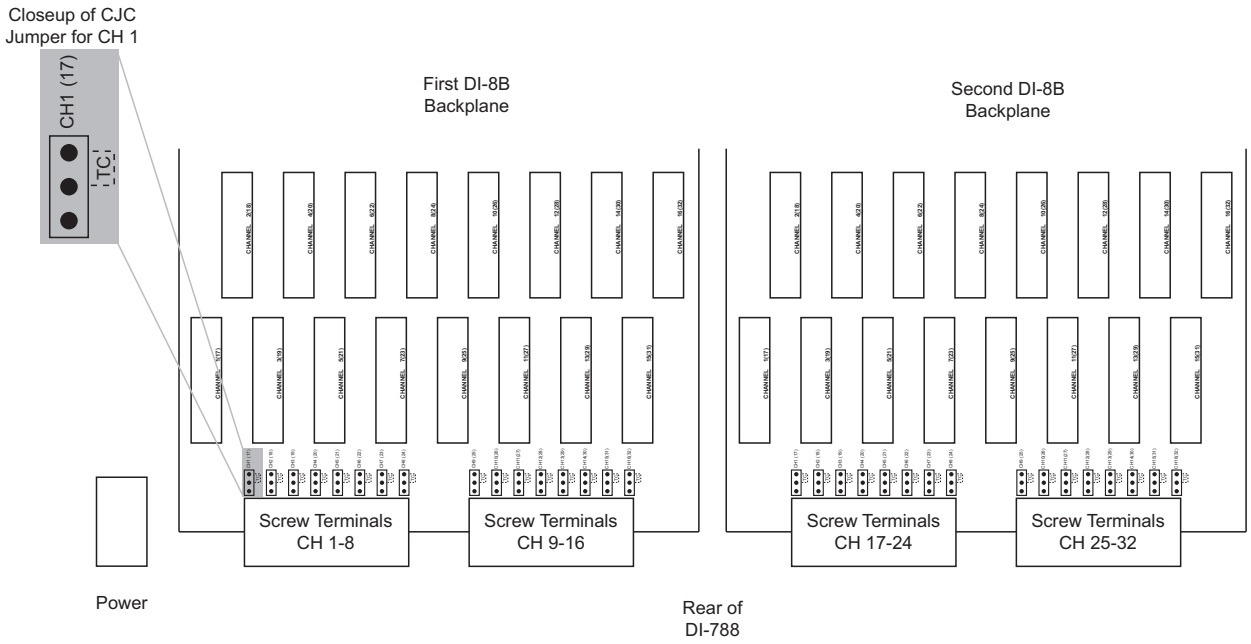
Enable Cold Junction Compensation for each Thermocouple Input module (DI-8B47) installed on your DI-788 (DI-785 products provide built-in CJC). Each channel has its own CJC enable jumper located in front of each channel position on the instrument circuit board (see also "Installing DI-8B Modules (DI-788 Instruments only)" on page 6 for disassembly).

Note: *If you are **not** using a Thermocouple Input Module on that channel be sure the jumper is in the "off" position or removed because it will affect the input signal.*

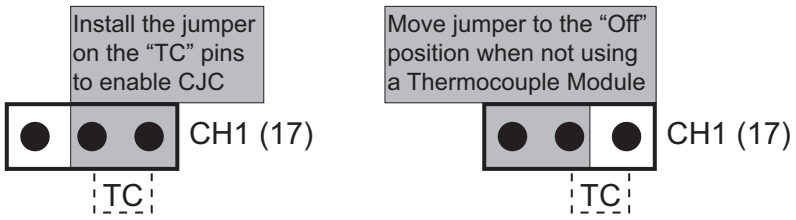
1. Unplug the device and make sure there is no power to the instrument.

2. Remove the top panel and reveal the 8B backplanes by removing the two top screws on the rear panel of the instrument and sliding the top panel out of the casing.

3. The CJC enable pins are located in front of each channel on the 8B backplane.



4. Move the jumper from the "Off" position to the "TC" position for each channel that uses a thermocouple module.

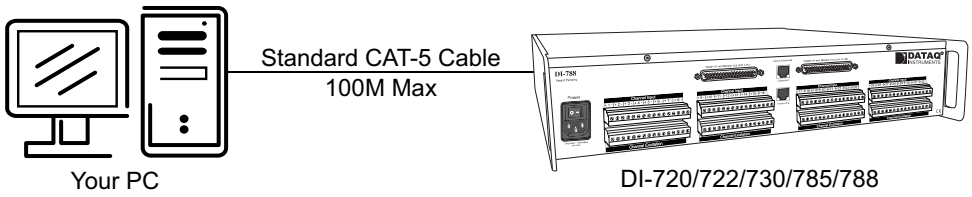

Install the jumper on the "TC" pins to enable CJC
CH1 (17)
TC
Move jumper to the "Off" position when not using a Thermocouple Module
CH1 (17)
TC

Note: *If you are not using a Thermocouple Input Module on that channel be sure the jumper is in the "off" position because this will affect the input signal.*

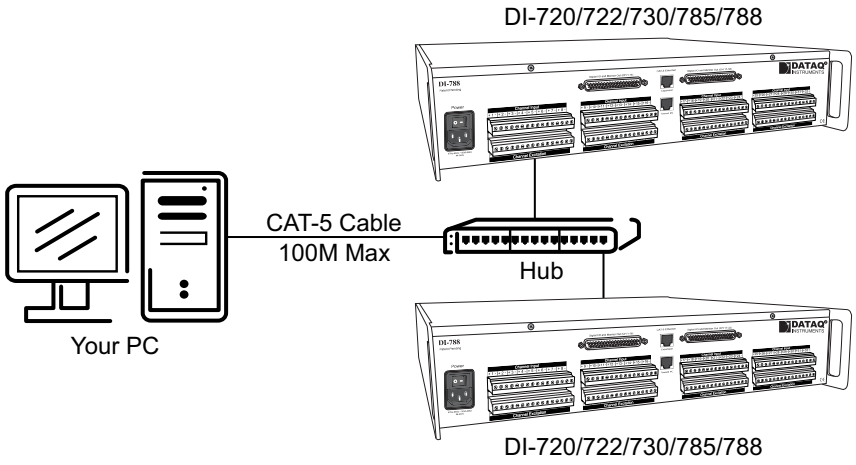
5. After the DI-8B modules and jumpers are installed reassemble the instrument making sure not to overtighten the rear panel screws.

Installing a Device Directly Connected to your PC or Connected via a Hub/ Switch where ONLY DI-72x, DI-730, or DI-78x Products are Installed

Installation of a DI-785 or DI-788 device directly connected to the network card on your computer requires you to change the IP address of your network card.



Installation of a DI-785 or DI-788 device via a hub/switch containing ONLY DI-720/722/730/785/788 products also requires you to change the IP address of your network card.

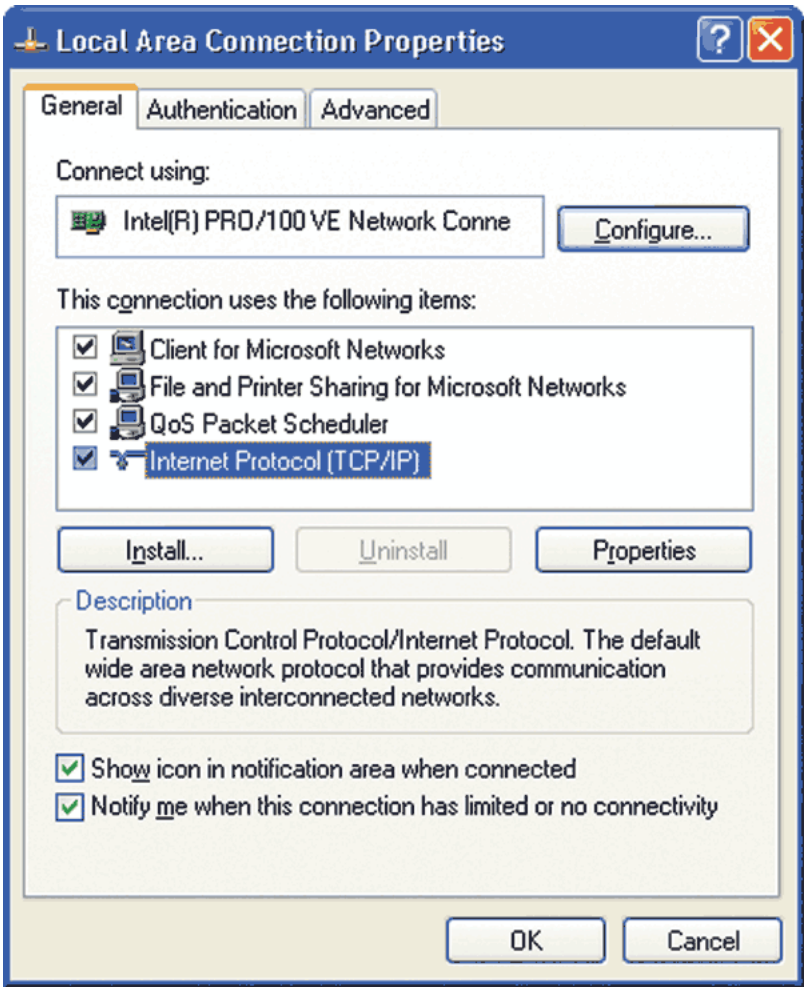


1. Find the **Network Connections** on your computer (usually in the Control Panel).

2. Double-click on the **Local Area Connection** icon.

3. Click on the **Properties** button.

4. Select **Internet Protocol (TCP/IP)** in the "This connection uses the following items" window and click on the **Properties** button.



5. Click on the **General** tab.

6. Select the radio button **Use the following IP address**.

7. Enter 169.254.0.1 in the space provided for the **IP address**.

8. Enter 255.255.0.0 in the space provided for the **Subnet mask**.

9. Click on the **OK** button to close the *Internet Protocol (TCP/IP) Properties* dialog box then click on the **OK** button in the *Local Area Connection Properties* dialog box for the changes to take effect.

Note: *If you unplug your device and connect your PC to a network or router you should change the TCP/IP properties back to their original state.*

10. Install WINDAQ software (see "WinDaq Software Installation" on page 13).

11. Run the TCP/IP Manager software (default location is *Start > Programs > WINDAQ > IP Manager*).

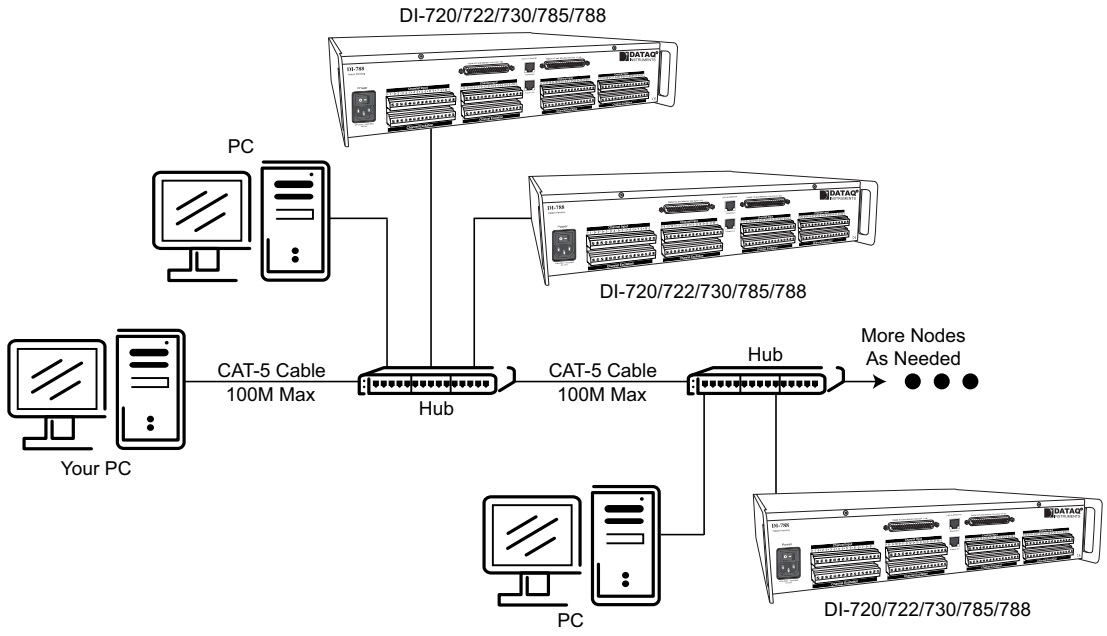
12. Connect the device (see "Connecting the Device to your PC or Network" on page 13) to your PC or hub.

13. Apply power the device (see "Applying Power to your Device" on page 14).

Note: *Always start the TCP/IP Manager software BEFORE powering the device to avoid extended delays resolving IP addresses.*

Installing a device via a distributed network without a DHCP server where one or more DATAQ Instruments devices will coexist with other Ethernet devices, and where static IP address are individually assigned

Installation of a DI-785 or DI-788 device connected to a distributed network that does not have a DHCP server or where the DHCP server is turned off requires you to set a static IP to the device after installation to drastically reduce the amount of time it takes for the TCP/IP Manager to find the device.



Note*: In the illustration above, the Hubs could instead be routers with DHCP turned off (i.e., a static IP assigned network). Contact your system administrator for details about your network.*

1. Have the system administrator designate an IP address for your device.

2. Install WINDAQ software (see "WinDaq Software Installation" on page 13) entering the device's MAC address at Step 13.

3. Run the TCP/IP Manager software (default location is *Start > Programs > WINDAQ > IP Manager*).

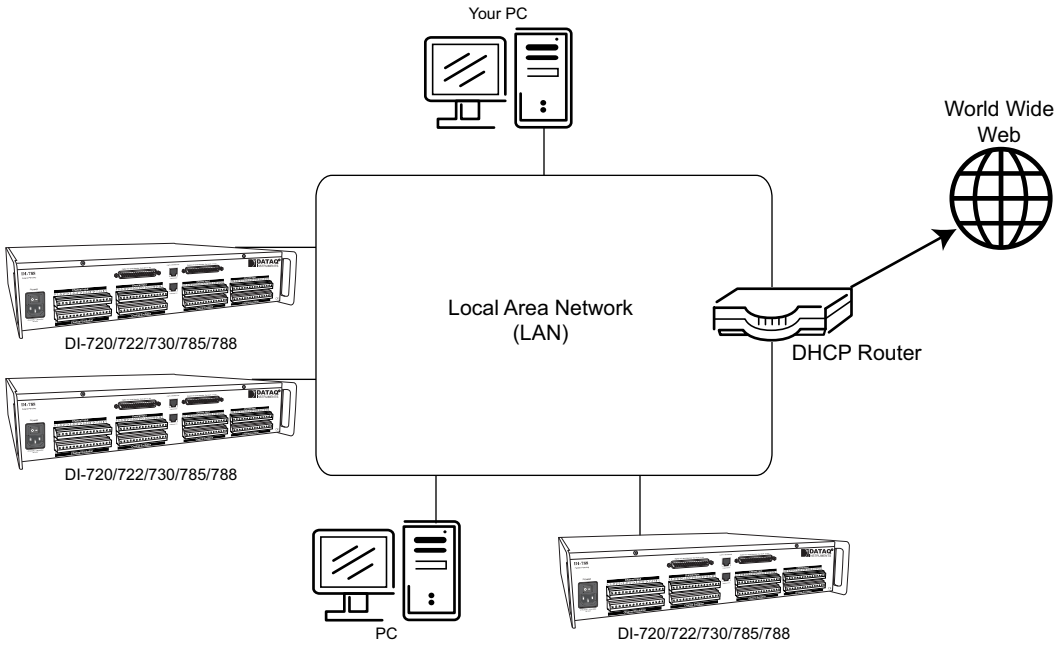
4. Connect the device to your network (see “Connecting the Device to your PC or Network” on page 13).
5. Power the device (see “Applying Power to your Device” on page 14).
6. In the *TCP/IP Manager main window,* **select the device** you have installed.
7. Select the **Change IP Address** drop down command.
8. Select the **Set a static IP Address** radio button.

9. Enter the IP address provided by your system administrator in Step 1 above. **Do not** check the Remote Device checkbox.
10. Click on the **OK** button for the change to take effect.

Note: *These instructions change the settings inside the device. If you move the device to a DHCP-enabled network (i.e., where IP addresses are assigned automatically by a DHCP server or router) you will need to change the device settings using the Dataq TCP/IP Manager. See the Dataq Instruments TCP/IP Manager help file for complete details.*

Installing a Device via a Distributed Network with a DHCP Server

Installation of a DI-785 or DI-788 device connected to a distributed network that has a DHCP server (i.e., a DHCP router automatically assigns IP addresses to each device connected to the network) requires no extra setup.



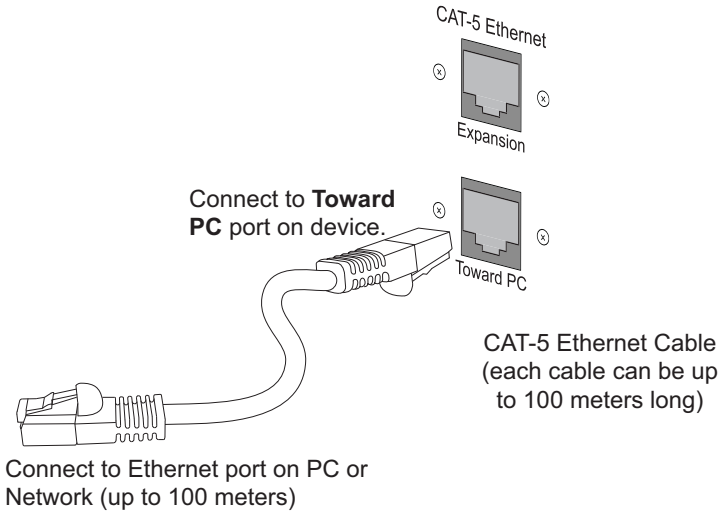
Note: *If you are unsure whether your network is DHCP-enabled or not, check with your system administrator before installing WINDAQ.*

1. Install WINDAQ software (see "WinDaq Software Installation" on page 13).
2. Connect your device to your Local Area Network (see "Connecting the Device to your PC or Network" on page 13).
3. Run the TCP/IP Manager software (default location is *Start* > *Programs* > *WINDAQ* > *IP Manager*).
4. Apply power to the device (see "Applying Power to your Device" on page 14).

Connecting the Device to your PC or Network

If you are installing multiple devices in a daisy chain for the purpose of synchronous distributed data acquisition please see "Daisy-Chaining Multiple Devices" on page 15 before installing the software. You may only access one device per network outside your subnet.

1. Connect one end of a CAT-5 Ethernet cable to the **Toward PC** port on the rear of the instrument.
2. Connect the other end of the CAT-5 Ethernet cable to an Ethernet port on your PC or to a port on an accessible network.


CAT-5 Ethernet
Expansion
Connect to **Toward PC** port on device.
Toward PC
CAT-5 Ethernet Cable (each cable can be up to 100 meters long)
Connect to Ethernet port on PC or Network (up to 100 meters)

WINDAQ Software Installation

All software is included in *The WINDAQ Resource CD*.

1. Insert the *The WINDAQ Resource CD* into your CD-ROM drive. The Windows auto run feature should start the installation program. If the Windows auto run feature is not enabled on your PC, run the setup.exe program located on the root of the CD directory.
2. In the "What do you want to do?" dialog box select the **Install Software** radio button and click **OK**.
3. In the "Installing Software" dialog box select the **Install Software for all other products** radio button and click **OK**.

4. In the “Specify the product” dialog box you must choose the version of WINDAQ you would like to install. If you purchased WINDAQ/Pro or Pro+ software, select the appropriate option and click OK. If you did not purchase software, choose the WINDAQ/Lite option and click **OK**.

5. In the “Specify the Instrument” dialog box select the **DI-785/788 Desktop Instruments** radio button and click **OK**.

6. In the “Select a Device” dialog box select the **DI-785/788 ENB** radio button and click **OK**.

7. The “Welcome!” dialog box allows you to cancel the installation. Click **OK** to continue installation or **Cancel** to abort.

8. Read through the Software License agreement carefully and either **Accept and Continue** or **Cancel** to exit the installation.

9. Enter your Registration Information in the appropriate text boxes and click **OK**.

10. Select the destination directory where you would like all folders and files to reside on your hard drive. We recommend you accept the default path, but you can name this new directory anything you like. Simply substitute the desired drive and directory in the Destination Directory text box. Once you have chosen the directory click **OK**.

11. The “Make Backups?” dialog box provides the option of creating backup copies of any files that may be replaced during installation. This is a safety courtesy; backup copies are not required. Click on **No** if you don't want to make backups. Click on **Yes** to create backups. If you decide to create backups, you will be prompted to specify a backup file directory.

12. Select the program manager group you would like to place the program shortcuts in your Windows programs. The default is recommended, but you can specify any program group or create a new one. Click **OK** to continue.

13. You must know either the MAC address or the IP address of the device to continue. The MAC address is located on the sticker on the bottom of your device. IP addresses must be retrieved from the system administrator. Enter the MAC address or IP address in the text box provided in the “MAC or IP address of the device” dialog box. If you are installing a device that is not connected to your Local Area Network, you should enter the IP address here. The software will go to that IP address and retrieve the MAC address for you. This will save further setup in the TCP/IP Manager. Click **OK** to continue. ***Note:*** *If you enter the wrong MAC address you will have to re-run this installation program with the correct MAC address to access the device.*

14. Click **Yes** in the “More ethernet devices to install” dialog box if you are installing multiple Ethernet devices.

15. Repeat Steps 12 and 13 until all Ethernet devices’ MAC addresses have been entered. Click **No** to continue installation.

16. The “Installation Option” dialog box allows you to specify access to WINDAQ for multiple users on the same PC. If you are the only user or you would like to allow access to all users click **Yes**. If there are multiple users and you would like to be the only one able to access WINDAQ click **No**. Click **Cancel** to abort the installation.

17. Select the desired options for installation of WINDAQ/XL and Advanced CODAS.

18. Installation is complete. Run the TCP/IP Manager via the Windows program group specified during WINDAQ Software installation (default is *Start > Programs > WINDAQ > IP Manager*) to access the device and run WINDAQ Acquisition Software.

Applying Power to your Device

Use the following procedure to apply power to your DI-785 or DI-788 instrument:

1. Plug the appropriate end of the provided power cable into the POWER connector on the rear panel of the instrument.

2. Plug the other end of the power cable to a standard wall outlet or appropriate power source.

3. Turn the POWER switch on. The green Power LED on the front of the instrument will glow green when power is applied.

Daisy-Chaining Multiple Devices

Multiple DI-785 and/or DI-788 instruments may be daisy-chained together to allow for one synchronous distributed data acquisition system. To maintain synchronous operation, Ethernet hubs and switches cannot be used between units. Make sure to enter each MAC address during installation. Daisy-chains must be installed to your Local Area Network (LAN) — you cannot access more than one device per IP address outside of your subnet. If you are not sure whether or not the devices are in your subnet see your system administrator before installation. You may acquire data from only one daisy chain at a time (i.e., the same PC cannot access two daisy chained groups at the same time).

Note: *If you are installing a daisy-chained group of instruments for the purpose of synchronized data acquisition, do not allow any other units or daisy chains to be installed to your subnet. Running other devices on the same subnet will cause the synced units to become unsynced.*

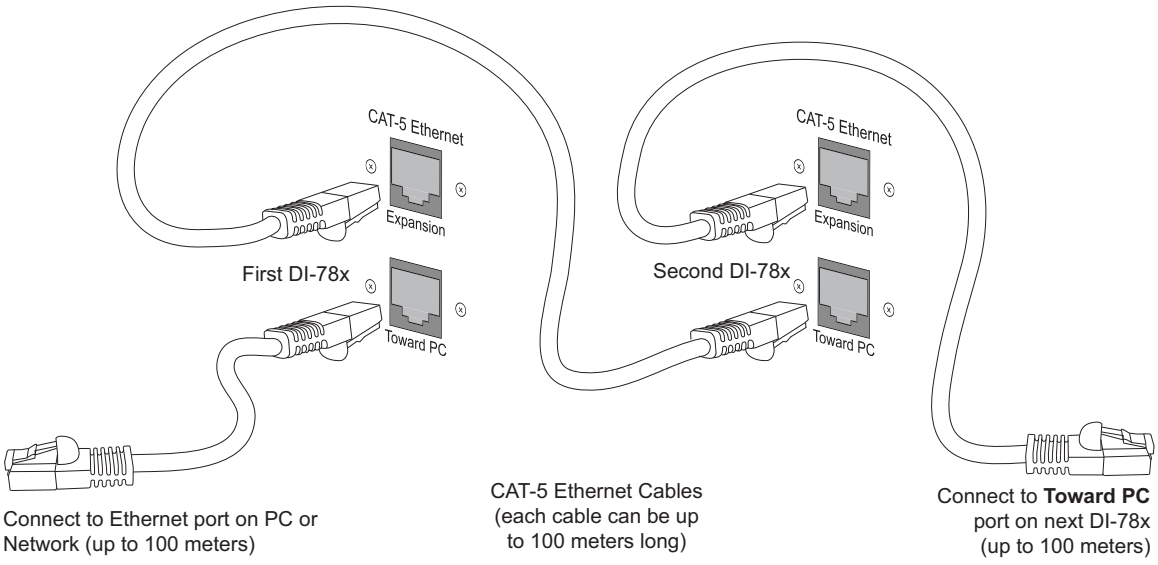
1. Connect one end of a CAT-5 Ethernet cable to the **Toward PC** port of the first DI-78x.

2. Connect the other end of the same CAT-5 Ethernet cable to the Ethernet port on your PC or LAN.

3. Connect one end of another CAT-5 Ethernet Cable to the **Expansion** port on the rear of the first DI-78x.

4. Connect the other end of the same CAT-5 Ethernet cable to the **Toward PC** port on the second DI-78x.

5. Continue installing more Ethernet devices by connecting a CAT-5 Ethernet cable to the **Expansion** port of the last device in the chain and the **Toward PC** port on the next device you are adding to the chain. Up to 32 devices may be installed in a single daisy chain. Each device may be separated by as much as 100 meters. Use the illustration below for reference.


CAT-5 Ethernet
Expansion
First DI-78x
Toward PC
CAT-5 Ethernet
Expansion
Second DI-78x
Toward PC
Connect to Ethernet port on PC or Network (up to 100 meters)
CAT-5 Ethernet Cables (each cable can be up to 100 meters long)
Connect to Toward PC port on next DI-78x (up to 100 meters)

Note: *You may also daisy chain any combination of DI-720, DI-722, or DI-730 instrument(s) to DI-78x products.*

Use the TCP/IP Manager to run WINDAQ Acquisition Software (see “TCP/IP Manager” on page 16). WINDAQ Acquisition Software provides data acquisition and recording capabilities. Daisy-chained units record separate files synchronously (one file for each unit) and place them in a user-defined Session folder. The user may define which units to use in a daisy-chain so not all units have to be used for a recording session.

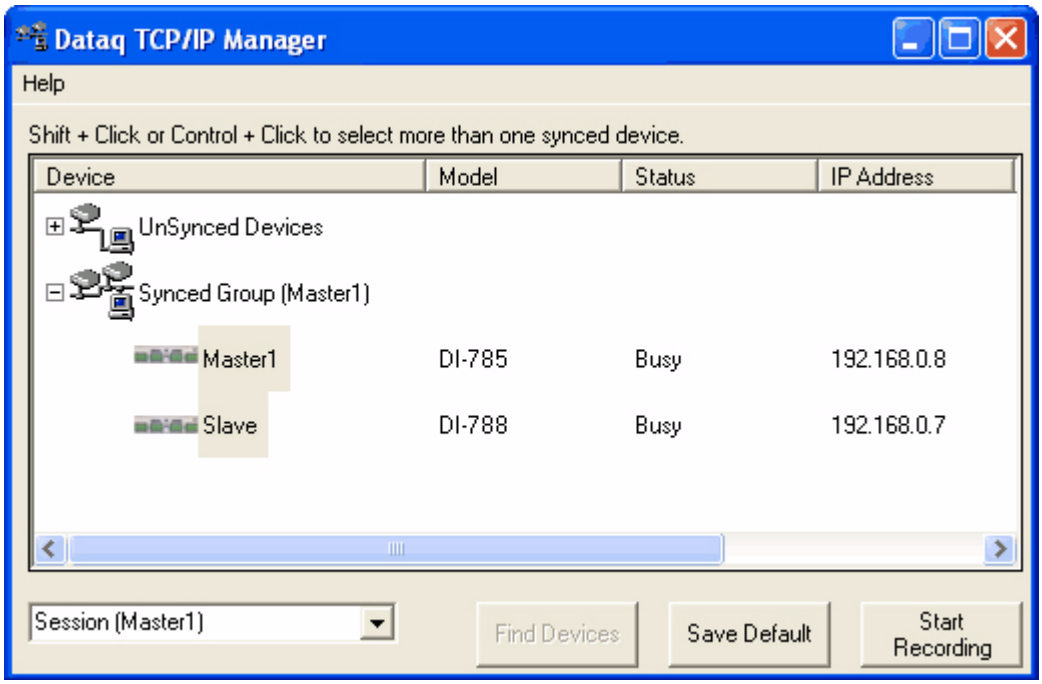
Use the WWB Navigator to playback and analyze multiple data files in a Session folder (see “WinDaq Waveform Navigator” on page 17) synchronously. The user may choose which files to view and analyze so not all data files in a session have to be viewed at the same time. Individual files may be independently opened using WINDAQ Playback Software (WINDAQ Waveform Browser).

TCP/IP Manager

The TCP/IP Manager allows you to easily manage all DI-78x Ethernet Instruments installed on your PC. The TCP/IP manager is installed when installing WINDAQ Software. Access the TCP/IP Manager via the Windows program group specified during WINDAQ Software installation (default is *Start* > *Programs* > *WINDAQ* > *IP Manager*). For help with TCP/IP settings and the TCP/IP Manager see the help files accessible in the application (press F1 to access context-sensitive help or use the Help menu).

The main TCP/IP window shows all Ethernet devices installed on your PC. Devices could be busy or unavailable if there are multiple users. If you entered the wrong MAC address during installation, the status of the device will be “Off Line” and you will need to rerun the installation program with the correct MAC address. “UnSynced” devices are all single units installed to your network (units that are not daisy-chained). Synced Groups are daisy-chained instruments. There is one Synced Group for each daisy chain. Each Synced Group is named using the first device in the chain (in parentheses).

Use the drop down command menu to change the description of a device. All commands are performed by first selecting a device, then using the drop down command menu. Multiple devices in the same Synced Group may be selected for a recording session by using the Shift or Control key. Multiple Synced Groups cannot be accessed by the same PC at the same time.



WINDAQ Acquisition software must be initiated from the TCP/IP Manager for all DI-78 instruments. To begin a recording session select a single device or a group of daisy-chained devices (using the Control or Shift key) and click the **Start WINDAQ** button. Each device will open an instance of WINDAQ Acquisition software. Change channel settings, calibration, and display options independently for each device using each instance of WINDAQ. Most WINDAQ

menu items are available when recording synced devices with the following exceptions: The Open and Record menu items in the File Menu are not available; The Triggered Mode, Triggered Storage, and Remote Storage menu items in the Options Menu are not available.

WINDAQ Waveform Navigator

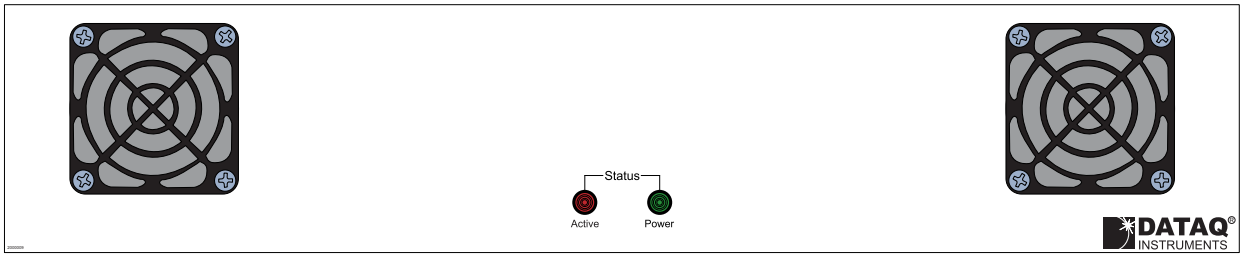
The WINDAQ Waveform Browser Navigator allows you to display and scroll through data recorded synchronously using multiple daisy-chained DI-78x instruments.Access the application via the Windows program group specified during WINDAQ Software installation (default is *Start > Programs > WINDAQ > WWB Navigator*). Select multiple files from a Session folder to open them in the WINDAQ Waveform Navigator. Use the scroll bar to navigate through all the data files synchronously.

For help with the WINDAQ Waveform Navigator see the help files accessible in the application (press F1 to access context-sensitive help or use the Help menu).

4. Instrument Controls, Indicators, and Connections

Instrument Front Panel

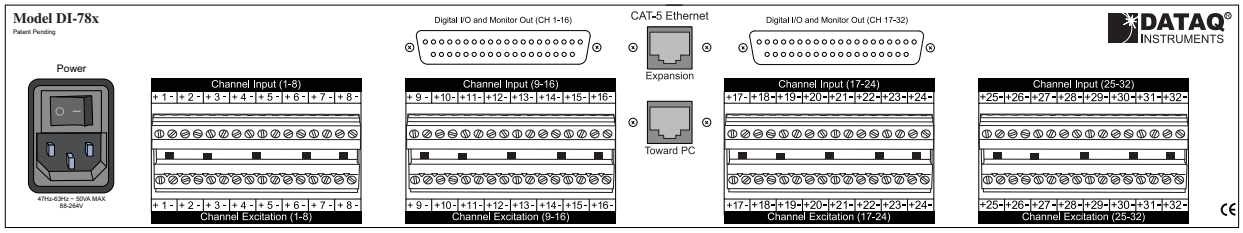
The Front panel of the DI-785 and DI-788 has two LEDs and two fans. The Power LED (green) indicates power is applied to the instrument. The Active LED (red) indicates that the instrument is initializing startup or acquiring data.



Note: *DO NOT block airflow from the fan. Airflow is necessary for accurate measurements - especially temperature measurements.*

Instrument Rear Panel

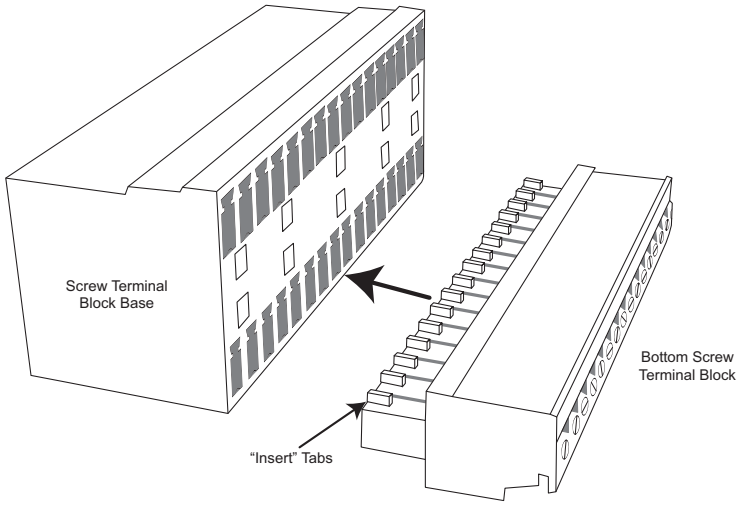
The rear panel of DI-78x products contains: Eight removable screw terminal blocks for input signals and excitation; Two 37-pin D sub connectors for digital inputs, digital outputs, and Monitor outputs; Two Ethernet connectors; and a power switch and plug.


Model DI-78x
Patent Pending
Power
47Hz-63Hz ~ 50VA MAX
88-264V
Digital I/O and Monitor Out (CH 1-16)
CAT-5 Ethernet
Expansion
Toward PC
Digital I/O and Monitor Out (CH 17-32)
DATAQ
INSTRUMENTS
Channel Input (1-8)
+ 1 - + 2 - + 3 - + 4 - + 5 - + 6 - + 7 - + 8 -
Channel Excitation (1-8)
Channel Input (9-16)
+ 9 - +10- +11- +12- +13- +14- +15- +16-
Channel Excitation (9-16)
Channel Input (17-24)
+17- +18- +19- +20- +21- +22- +23- +24-
Channel Excitation (17-24)
Channel Input (25-32)
+25- +26- +27- +28- +29- +30- +31- +32-
Channel Excitation (25-32)

Removable Screw Terminal Blocks

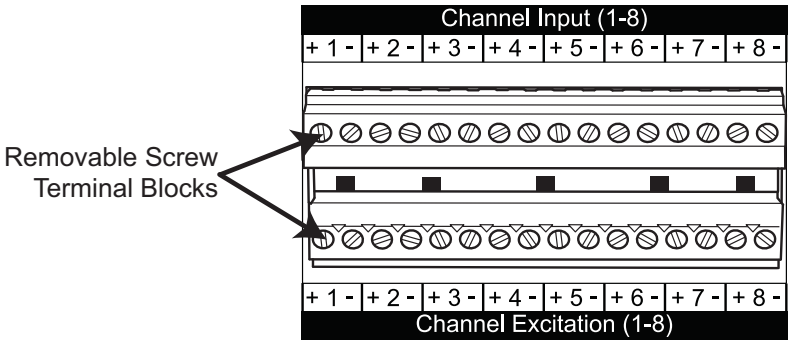
The eight 16-position screw terminals blocks may be pulled from their base to make signal lead connections less cumbersome and allow you to easily swap them if desired. Pull both sides of the screw terminal block away from its base until it pulls loose. The terminal blocks fit snug into their base - they may be difficult to remove. After signal leads are installed (see “Connecting Signal Leads” on page 20), firmly insert them back into the base. The top block

should have the wire clamps facing up. The lower block should have the wire clamps facing down. Insert tabs for both blocks should be facing up.



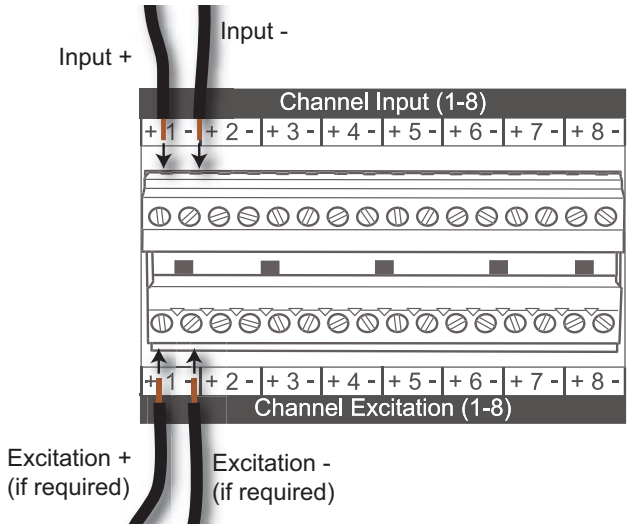
Connecting Signal Leads

Pinout for each screw terminal block is clearly labeled on the rear panel overlay.

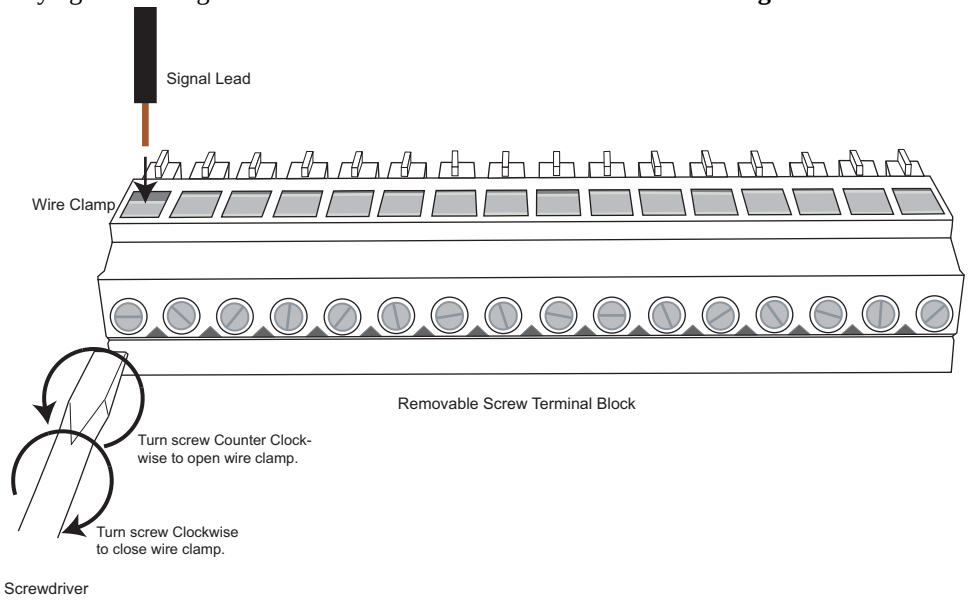


1. Insert the stripped end of a signal lead into the desired terminal directly over (top screw terminal block) or under (bottom terminal block) the screw.

2. Each channel has a terminal for Input +, Input -, Excitation +, and Excitation -. Connect all appropriate signal leads for that channel.



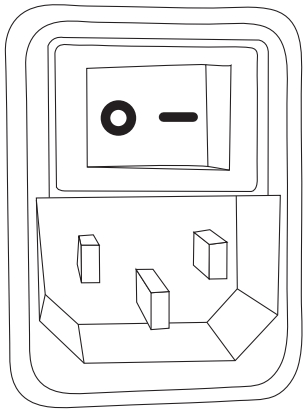
3. Tighten the wire clamp by rotating the screw clockwise with a small screwdriver. Make sure that the wire clamp tightens only against the signal wire and not the wire insulation. **Do not over-tighten.**



4. Tug gently on the signal lead to ensure that it is firmly secured.

Power

Use the supplied power cable to connect the instrument to a standard outlet. Use the switch to toggle power on/off. The Power LED on the front of the instrument will glow green when power is applied (see “Instrument Front Panel” on page 19 for location of LED).

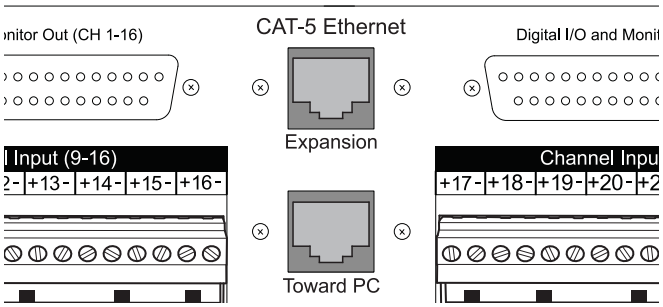


Keep the following Power specifications in mind when connecting power:

Voltage Range: 88 to 264 VAC rms
Current Range: 1.3A @ 115 VAC; 0.8A @ 230 VAC
Frequency Range: 47 to 63 Hz

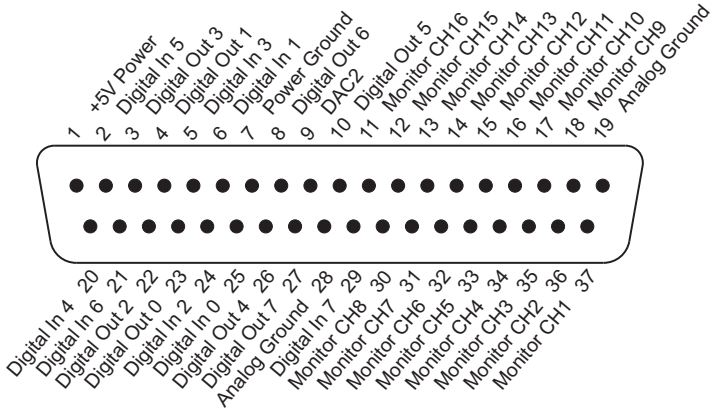
Ethernet Connectors

Use the Ethernet connectors to connect your DI-78x instrument to an available Ethernet port on your PC or to an accessible network. Units may also be daisy-chained to form one synchronous distributed data acquisition network (see “Daisy-Chaining Multiple Devices” on page 15). Use standard CAT-5 patch cables for connections.

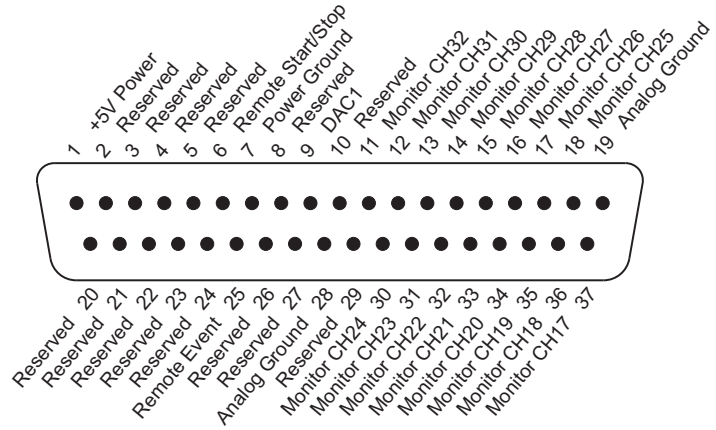


Digital I/O and Monitor Out

DI-78x products have 8 digital input and 8 digital output lines for input/output operations. These lines provide an interface for the transfer of data between user memory and a peripheral device connected to the instrument. Digital inputs can monitor alarms or sensors with TTL outputs, while digital outputs can drive TTL inputs on control or measurement equipment. Use the monitor out ports to check your analog input signals. Use the Remote Start/Stop and Remote Event pins for WINDAQ remote controls. Use the monitor out ports to connect the 5B or 8B amplifier output to another device, if required. This output is wired in parallel with the input of the 785/788 multiplexer. Refer to the following diagram for pinout.



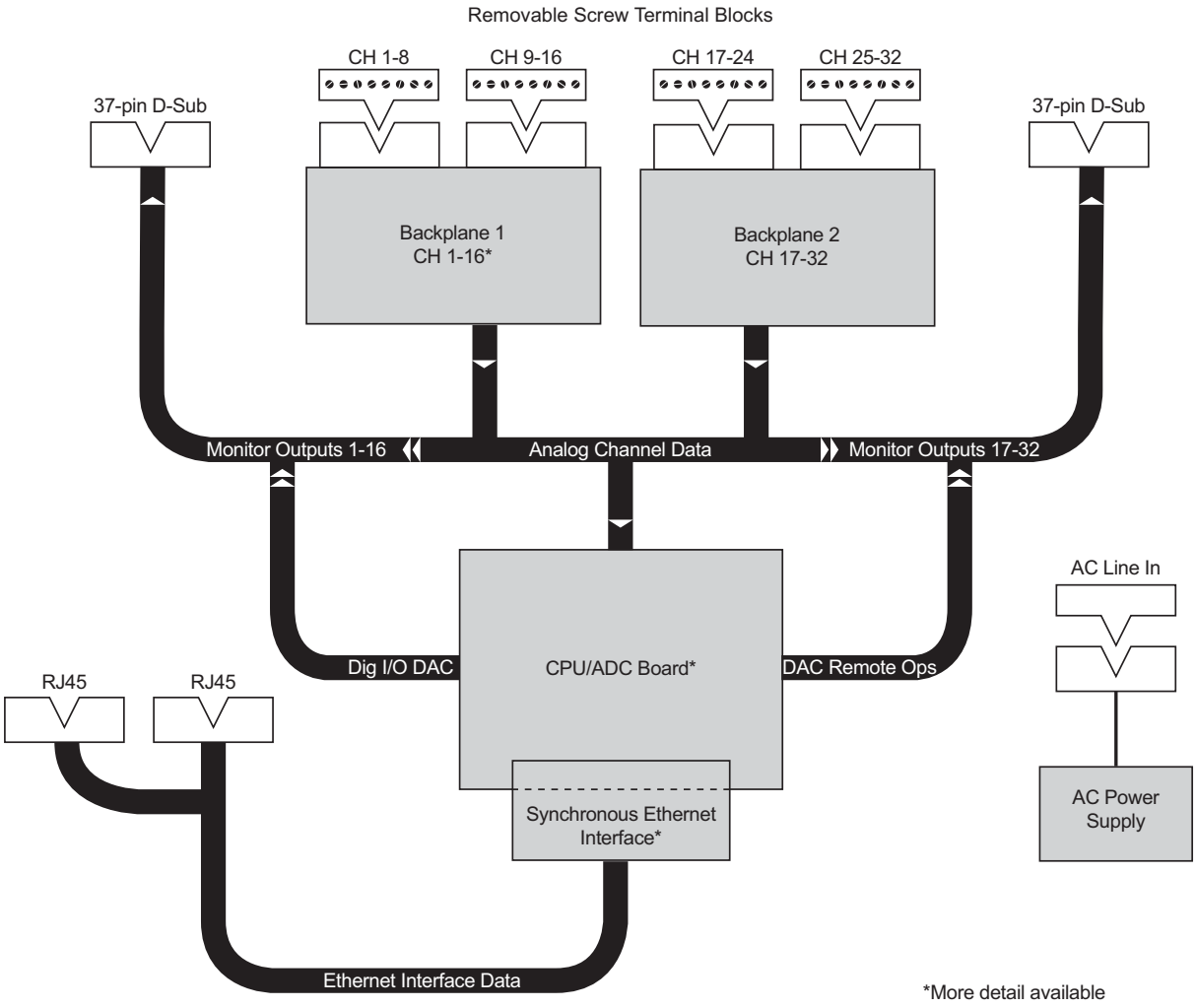
Digital I/O and Monitor Out (CH 17-32)



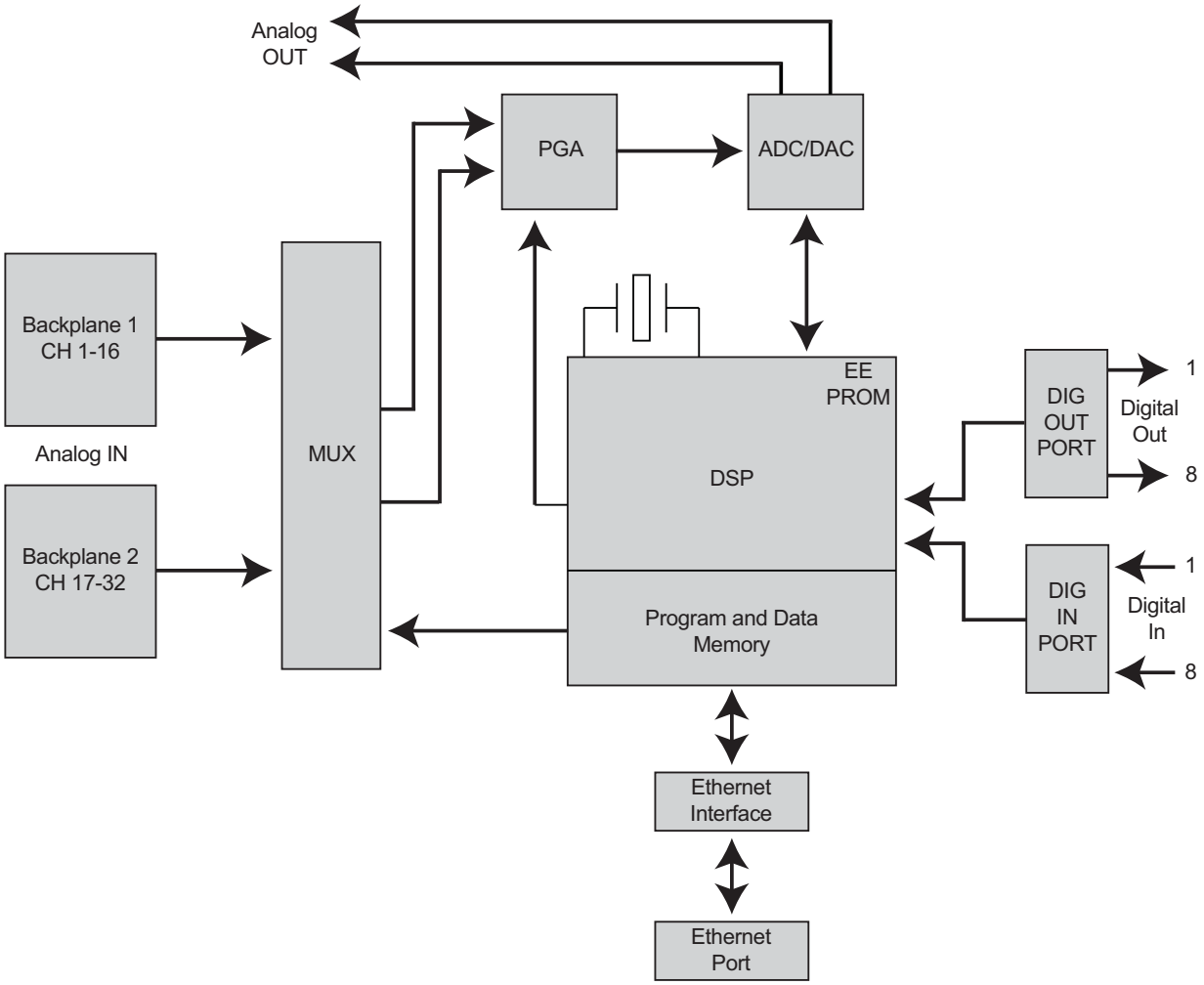
5. Block Diagrams

Main Diagram

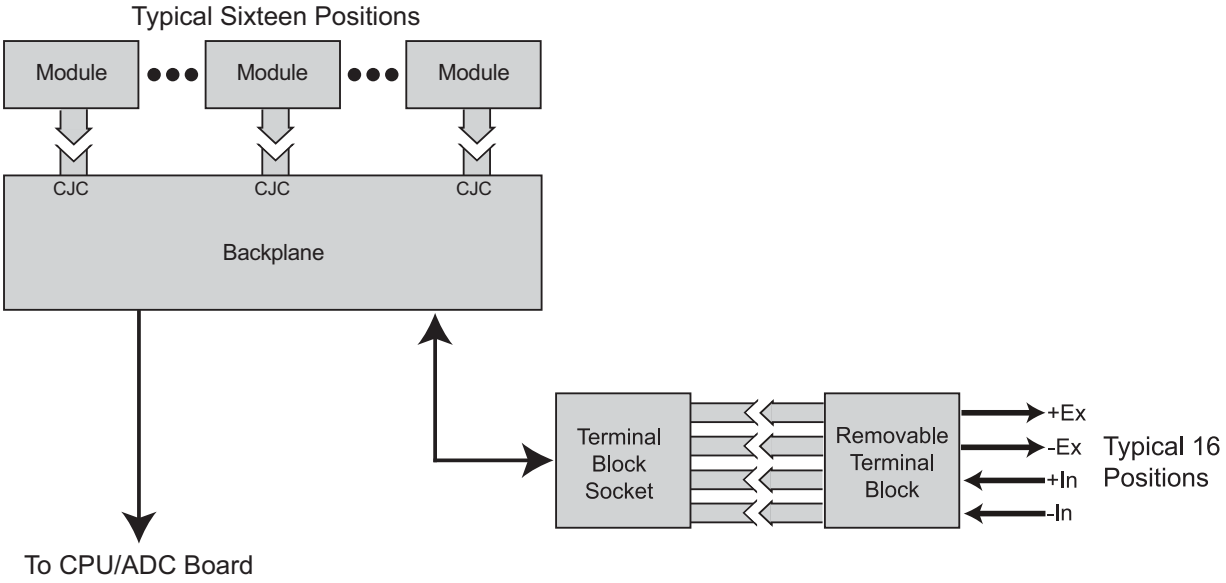
Block Diagrams for both the DI-785 and the DI-788 and their components are identical.



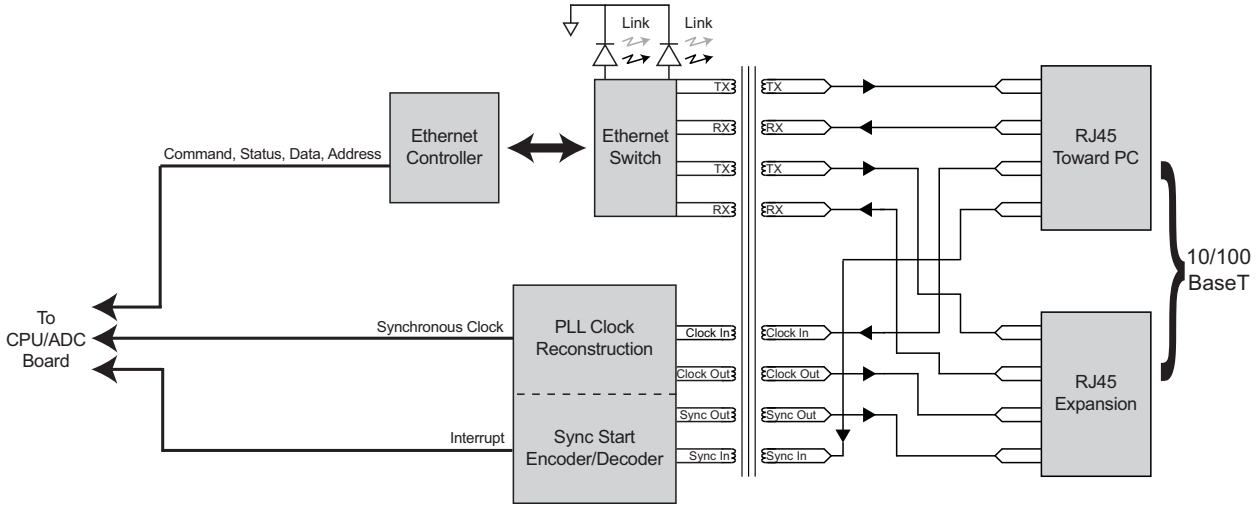
CPU/ADC Board



Backplane



Ethernet Interface



6. Accessories

DI-5B Modules

DI-5B30/31 Analog Voltage Input Modules, Narrow Bandwidth 28
DI-5B32 Analog Current Input Modules 29
DI-5B33 Isolated True RMS Input Modules 30
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DI-5B36 Potentiometer Input Modules 35
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DI-8B36 Potentiometer Input Modules 50
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DI-8B50/51 Analog Voltage Input Modules, 20kHz Bandwidth 56

DI-5B30/31 Analog Voltage Input Modules, Narrow Bandwidth

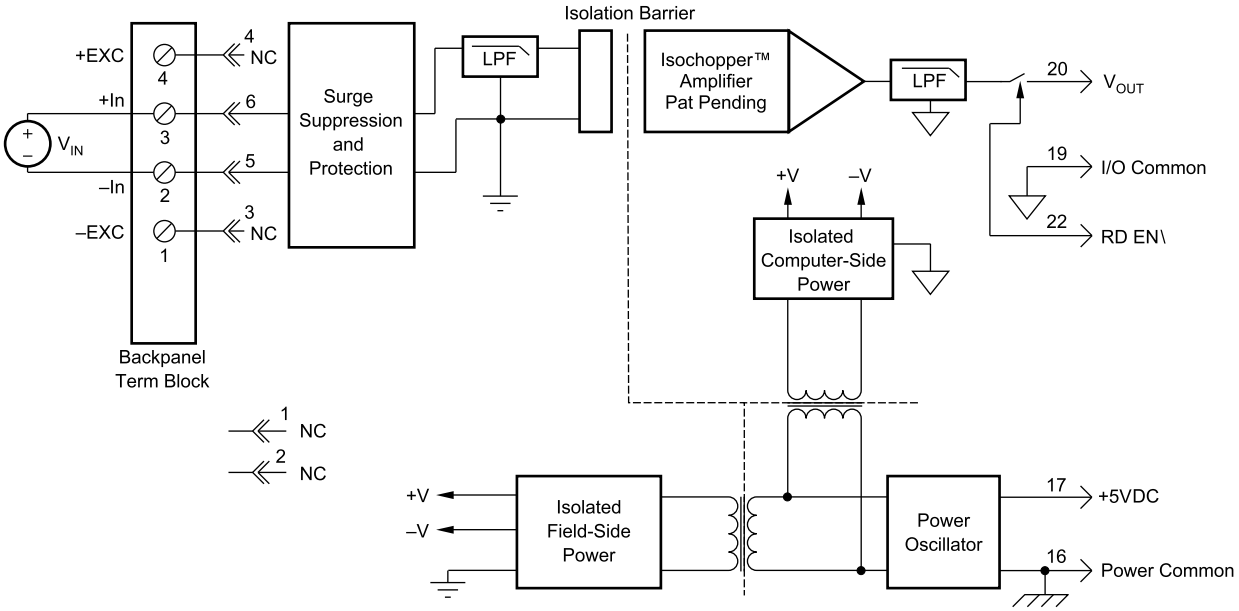
Each DI-5B30 and DI-5B31 voltage input module provides a single channel of analog input which is filtered, isolated, amplified, and converted to a high level analog voltage output (see block diagram). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B30 and DI-5B31 modules provides protection against accidental connection of power-line voltages up to 240VAC.:



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B30-01	-10mV to +10mV	-5V to +5V
DI-5B30-02	-50mV to +50mV	-5V to +5V
DI-5B30-03	-100mV to +100mV	-5V to +5V
DI-5B31-01	-1V to +1V	-5V to +5V
DI-5B31-02	-5V to +5V	-5V to +5V
DI-5B31-03	-10V to +10V	-5V to +5V
DI-5B31-07*	-20V to +20V	-5V to +5V
DI-5B31-09*	-40V to +40V	-5V to +5V

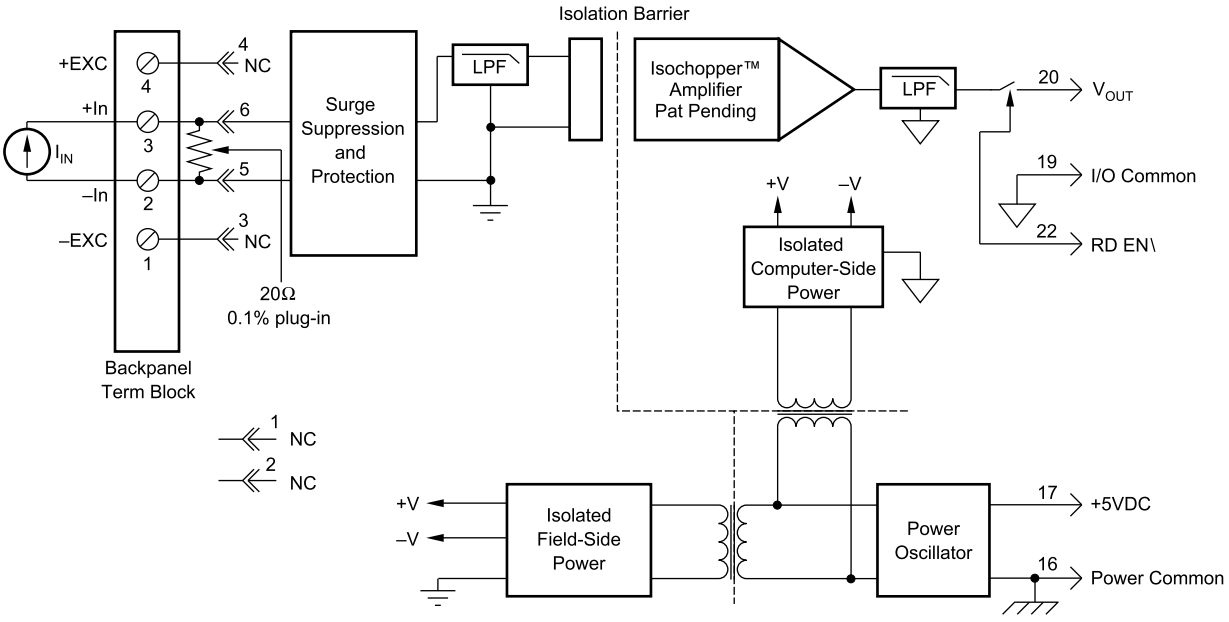
*CSA certification pending.

DI-5B32 Analog Current Input Modules

Each DI-5B32 current input module provides a single channel of analog input which is filtered, isolated, amplified, and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A precision 20Ω current conversion resistor is supplied with the DI-5B32 module (see block diagram for installation details).



Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B32 modules provides protection against accidental connection of power-line voltages up to 240VAC.

Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B32-01	4mA to 20mA	0V to +5V
DI-5B32-02	0mA to 20mA	0V to +5V

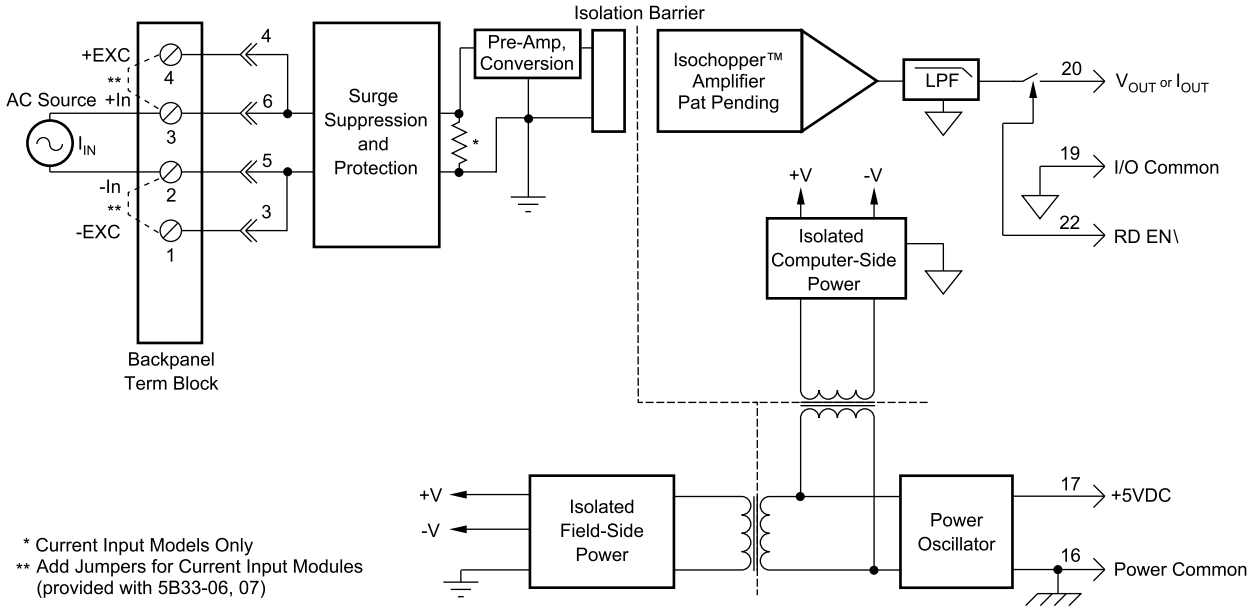
DI-5B33 Isolated True RMS Input Modules

Each DI-5B33 True RMS input module provides a single channel of AC input which is converted to its True RMS dc value, filtered, isolated, amplified, and converted to a standard process voltage or current output (see block diagram).

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The field voltage or current input signal is processed through a pre-amplifier and RMS converter on the field side of the isolation barrier. The converted dc signal is then chopped by a proprietary chopper circuit and transferred across the transformer isolation barrier, suppressing transmission of common mode spikes and surges. The computer side circuitry reconstructs, filters and converts the signal to industry standard outputs. Modules are powered from +5VDC, ±5%.

For current output models an external loop supply is required having a compliance voltage of 14 to 48VDC. Connection, with series load, is between Pin 20 (+) and Pin 19 (-).



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B33-01	100mV	0V to +5V
DI-5B33-02	1V	0V to +5V
DI-5B33-03	10V	0V to +5V
DI-5B33-04	150V	0V to +5V
DI-5B33-05	300V	0V to +5V

DI-5B34 Linearized 2- or 3-Wire RTD Input Modules

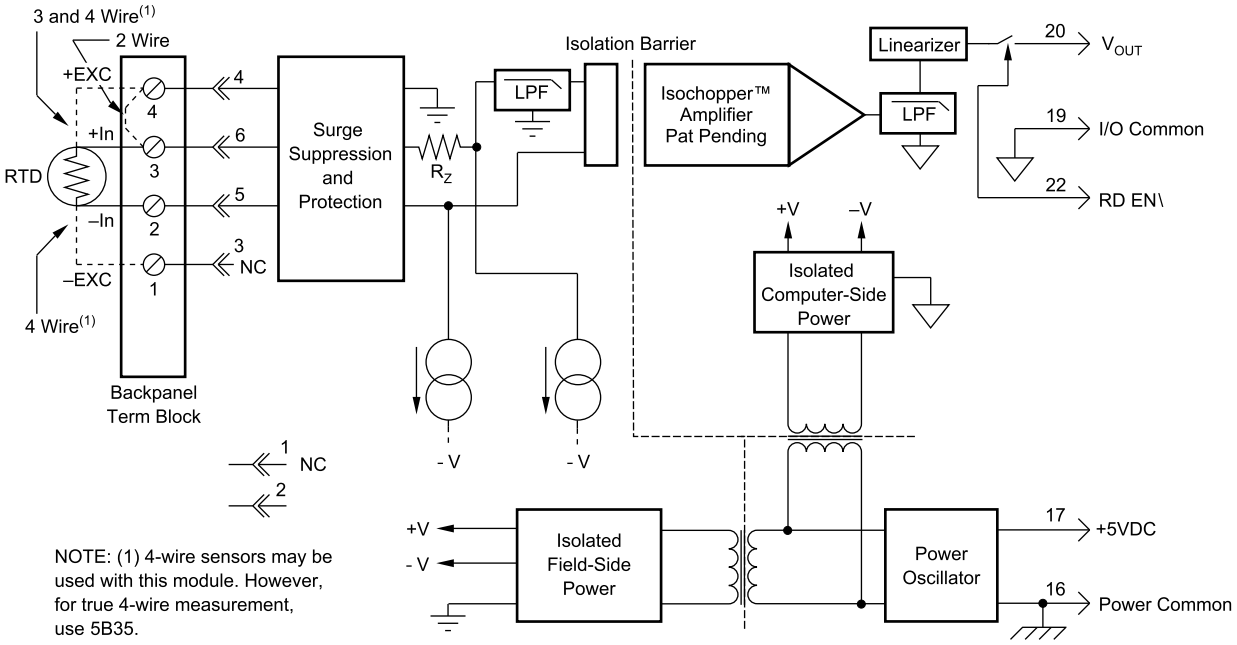
Each DI-5B34 RTD input module provides a single channel of RTD input which is filtered, isolated, amplified, linearized, and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

RTD excitation is provided from the module by two matched current sources. When using a three-wire RTD, this method allows an equal current to flow in each RTD lead, which cancels the effects of lead resistances. The excitation currents are very small (0.25mA for 100Ω Pt and 120Ω Ni, and 1.0mA for 10Ω Cu) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B34 modules provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information

MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY*
100Ω Pt, α = 0.00385			
DI-5B34-01	-100°C (-148°F) to +100°C (+212°F)	0V to +5V	±0.46°C
DI-5B34-02	0°C (32°F) to +100°C (+212°F)	0V to +5V	±0.36°C
DI-5B34-03	0°C (32°F) to +200°C (+392°F)	0V to +5V	±0.46°C
DI-5B34-04	0°C (32°F) to +600°C (+1112°F)	0V to +5V	±0.88°C
10Ω Cu, α = 0.004274			
DI-5B34C-01	0°C (32°F) to +120°C (+248°F) (10Ω at 0°C)	0V to +5V	±0.23°C
DI-5B34C-02	0°C (32°F) to +120°C (+248°F) (10Ω at 25°C)	0V to +5V	±0.23°C
DI-5B34C-03**	0°C (32°F) to +160°C (+320°F) (10Ω at 0°C)	0V to +5V	±0.32°C
120Ω Ni, α = 0.00672			
DI-5B34N-01	0°C (32°F) to +300°C (+572°F)	0V to +5V	±0.40°C

* Includes conformity, hysteresis and repeatability.

**CSA certification pending.

DI-5B35 Linearized 4-Wire RTD Input Modules

In RTD temperature measurement applications requiring a very high level of accuracy, the DI-5B35 4-Wire RTD input module offers a significant advantage over 3-wire measurement techniques (see block diagram). The DI-5B35 measures only the voltage dropped across the RTD and almost completely ignores the resistance or length of the RTD lead wires. The DI-5B34 3-Wire RTD module provides lead resistance compensation, but requires equal lead resistances, while the DI-5B35 does not require matched lead resistances.

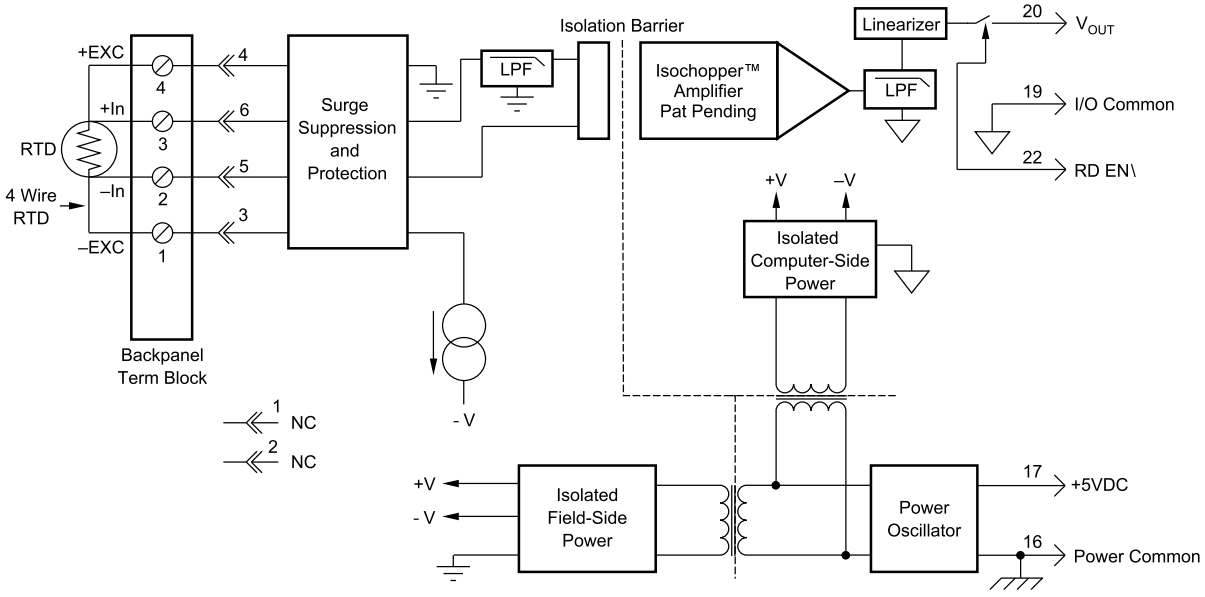
Each DI-5B35 RTD input module provides a single channel of RTD input which is filtered, isolated, amplified, linearized, and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

RTD excitation is provided from the module by a precision current source. The excitation current is available on two leads which are separate from the two input signal measuring leads. The excitation current does not flow in the input signal leads, which allows RTD measurement to be totally independent of lead resistance. The excitation current is very small (0.25mA for 100Ω Pt and 120Ω Ni, and 1.0mA for 10Ω Cu) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B35 modules provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information			
MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY*
100Ω Pt, α = 0.00385			
DI-5B35-01	-100°C (-148°F) to +100°C (+212°F)	0V to +5V	±0.46°C
DI-5B35-02	0°C (32°F) to +100°C (+212°F)	0V to +5V	±0.36°C
DI-5B35-03	0°C (32°F) to +200°C (+392°F)	0V to +5V	±0.46°C
DI-5B35-04	0°C (32°F) to +600°C (+1112°F)	0V to +5V	±0.88°C
10Ω Cu, α = 0.004274			
DI-5B35C-01	0°C (32°F) to +120°C (+248°F) (10Ω at 0°C)	0V to +5V	±0.23°C
DI-5B35C-02DI-	0°C (32°F) to +120°C (+248°F) (10Ω at 25°C)	0V to +5V	±0.23°C
5B35C-03**	0°C (32°F) to +160°C (+320°F) (10Ω at 0°C)	0V to +5V	±0.32°C
120Ω Ni, α = 0.00672			
DI-5B35N-01	0°C (32°F) to +300°C (+572°F)	0V to +5V	±0.40°C

* Includes conformity, hysteresis and repeatability.

**CSA certification pending.

DI-5B36 Potentiometer Input Modules

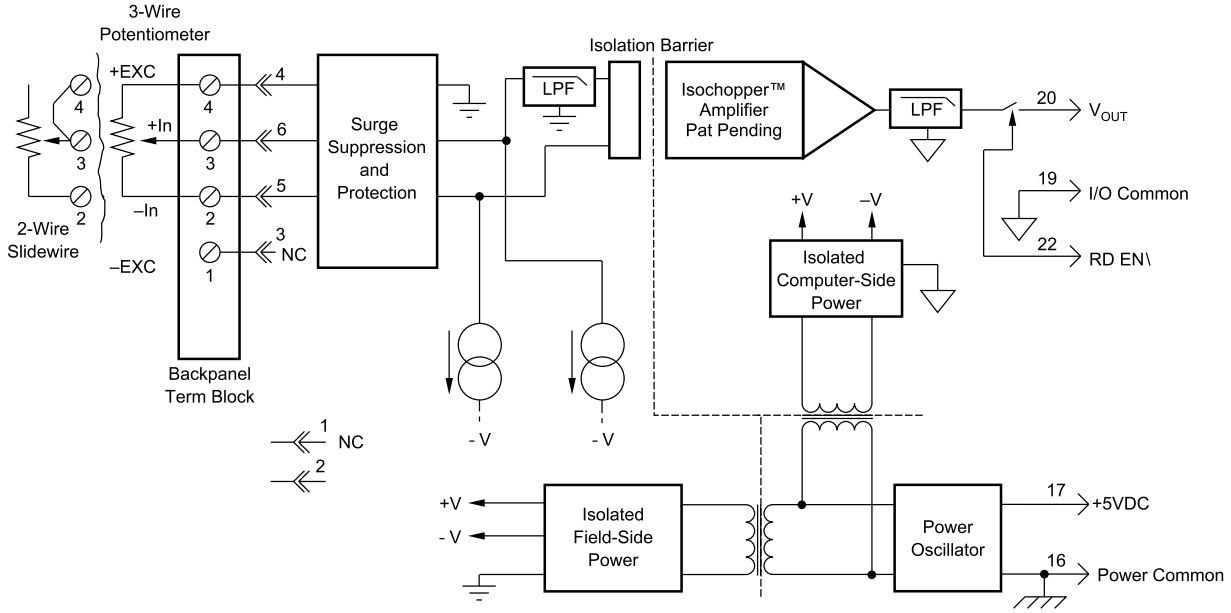
Each DI-5B36 Potentiometer input module provides a single channel of Potentiometer input which is filtered, isolated, amplified, and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ± 50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

Excitation for the potentiometer is provided from the module by two matched current sources. When using a three-wire potentiometer, this method allows cancellation of the effects of lead resistances. The excitation currents are very small (less than 1.0mA) which minimizes self-heating of the potentiometer.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are in the output stage. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B36 module provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B36-01	0 to 100Ω	0V to +5V
DI-5B36-02	0 to 500Ω	0V to +5V
DI-5B36-03	0 to 1kΩ	0V to +5V
DI-5B36-04	0 to 10kΩ	0V to +5V

DI-5B38 Strain Gage Input Modules, Narrow & Wide Bandwidth

Each DI-5B38 Strain Gage input module provides a single channel of Strain Gage input which is filtered, isolated, amplified, and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

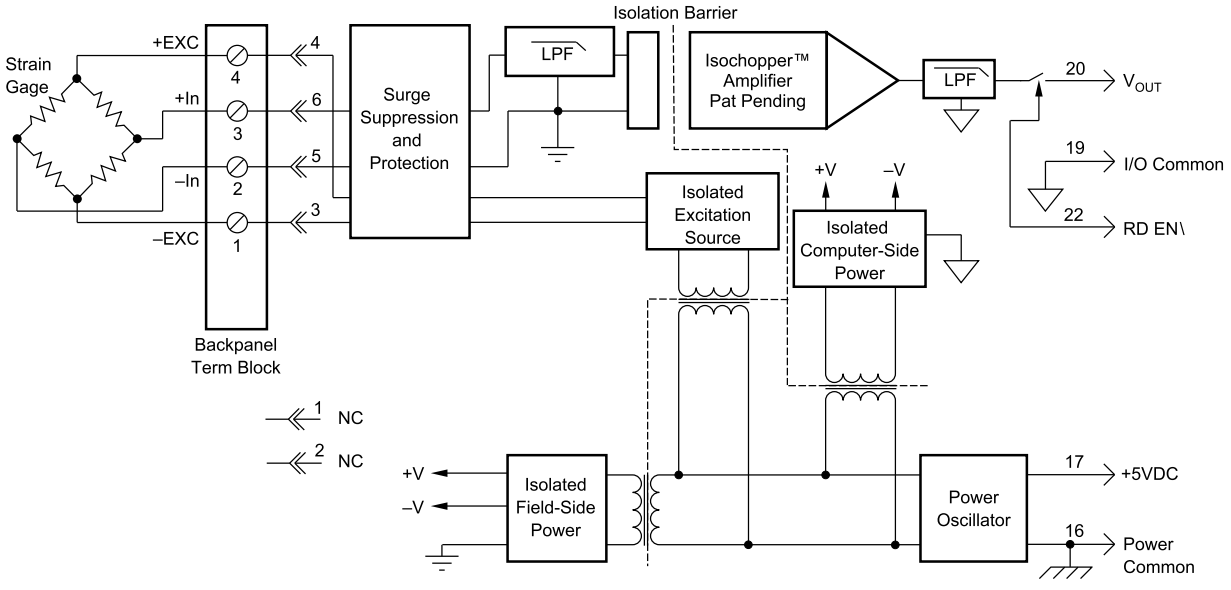
The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The DI-5B38 can interface to full- or half-bridge transducers with a nominal resistance of 100Ω to 10kΩ. A matched pair of bridge-completion resistors (to ±1mV at +10V excitation) allows use of low cost half- or quarter-bridge transducers. On wide bandwidth modules, the 10kHz bandwidth allows measurement of high speed processes such as vibration analysis.

Strain Gage excitation is provided from the module by a very stable 10V or 3.333V source. The excitation supply is fully isolated, allowing the amplifier inputs to operate over the full range of the excitation voltage. Full scale sensitivities of 2mV/V, 3mV/V or 10mV/V are offered. With 10V excitation, this results in a ±20mV, ±30mV or ±100mV full scale input range.

On wide bandwidth modules, the input signal is processed through a preamplifier on the field side of the isolation barrier. This preamplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10kHz. On all modules, after initial field side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

Special input circuits on the DI-5B38 module provide protection of the signal inputs and the isolated excitation supply up to 240VAC.



Ordering Information				
MODEL	INPUT BRIDGE TYPE	INPUT RANGE	EXCITATION	OUTPUT RANGE
DI-5B38-31 or DI-5B38-01	Full Bridge	100Ω to 10kΩ	3.333V at 3mV/V Sensitivity	-5V to +5V
DI-5B38-32 or DI-5B38-02	Full Bridge	300Ω to 10kΩ	10.0V at 3mV/V Sensitivity	-5V to +5V
DI-5B38-33 or DI-5B38-03	Half Bridge	100Ω to 10kΩ	3.333V at 3mV/V Sensitivity	-5V to +5V
DI-5B38-34 or DI-5B38-04	Half Bridge	300Ω to 10kΩ	10.0V at 3mV/V Sensitivity	-5V to +5V
DI-5B38-35 or DI-5B38-05	Full Bridge	300Ω to 10kΩ	10.0V at 2mV/V Sensitivity	-5V to +5V
DI-5B38-36 or DI-5B38-06	Full Bridge	100Ω to 10kΩ	3.333V at 10mV/V Sensitivity	-5V to +5V
DI-5B38-37 or DI-5B38-07	Full Bridge	300Ω to 10kΩ	10.0V at 10mV/V Sensitivity	-5V to +5V

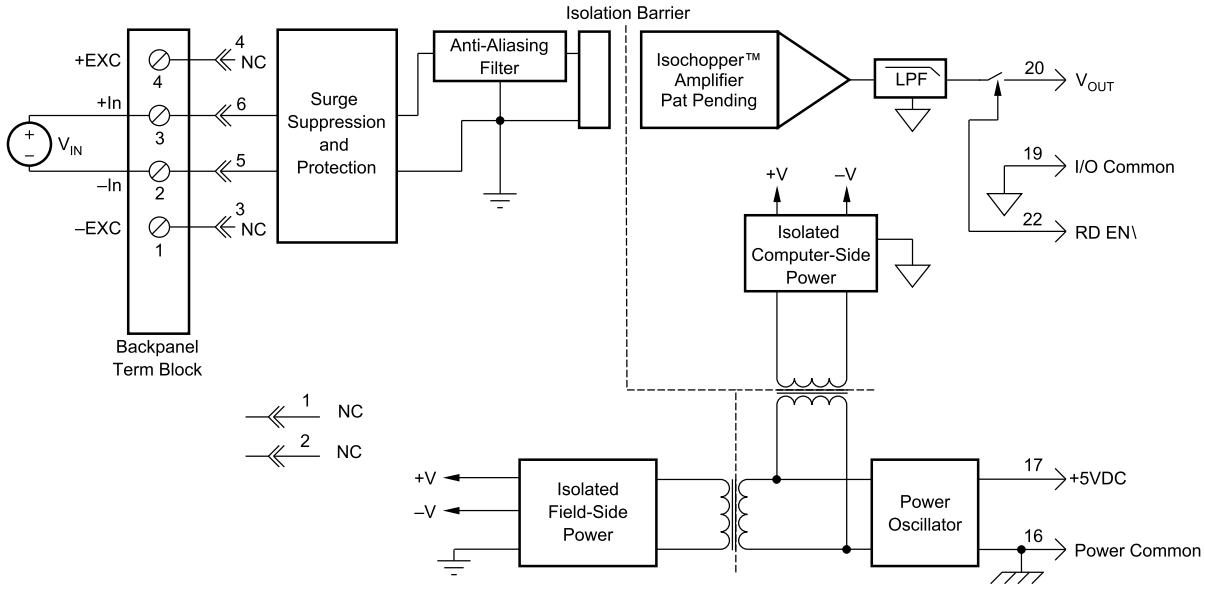
DI-5B40/41 Analog Voltage Input Modules, Wide Bandwidth

Each DI-5B40 and DI-5B41 wide bandwidth voltage input module provides a single channel of analog input which is amplified, isolated, and converted to a high level analog voltage output (see block diagram). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The input signal is processed through a preamplifier on the field side of the isolation barrier. This preamplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the DI-5B40 and DI-5B41 modules provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B40-01	-10mV to +10mV	0V to +5V
DI-5B40-02	-50mV to +50mV	0V to +5V
DI-5B40-03	-100mV to +100mV	0V to +5V
DI-5B41-01	-1V to +1V	0V to +5V
DI-5B41-02	-5V to +5V	0V to +5V
DI-5B41-03	-10V to +10V	0V to +5V
DI-5B41-07**	-20V to +20V	0V to +5V
DI-5B41-09**	-40V to +40V	0V to +5V

*Required for DI-500-HV high voltage option.
**CSA certification pending.

DI-5B42 2-Wire Transmitter Interface Modules

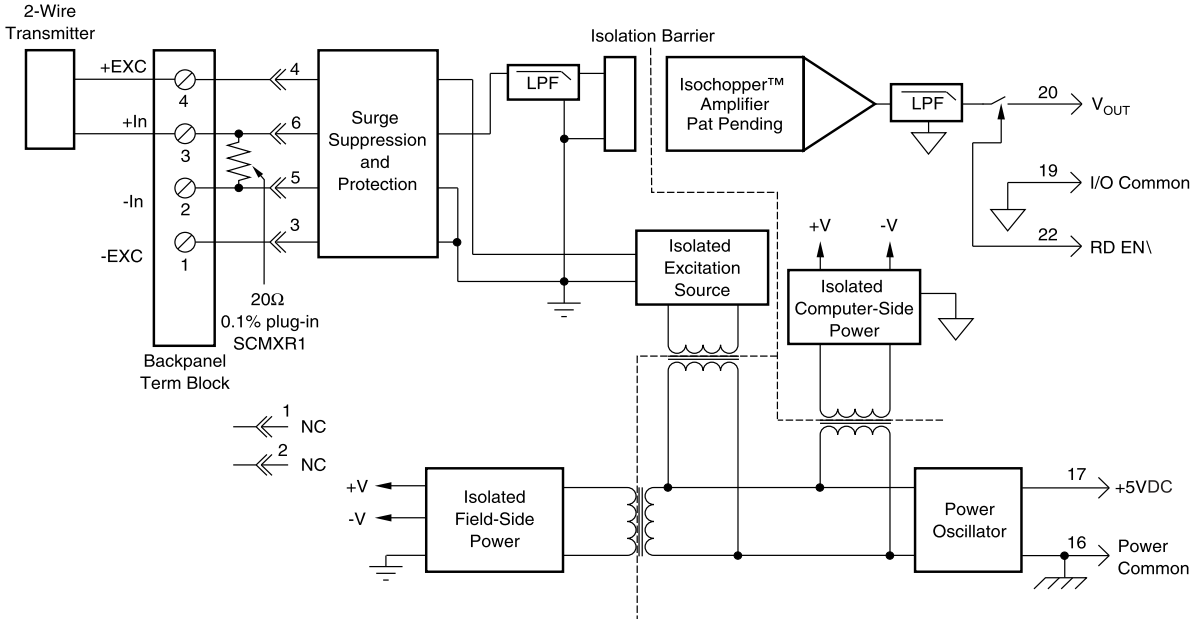
Each DI-5B42 2-wire transmitter interface module provides a single channel which accepts a 4 to 20 mA process current input and provides a standard +1 to +5V output signal (see block diagram). An isolated +20VDC regulated power supply is provided to power the current transmitter. This allows a 2-wire loop powered transmitter to be directly connected to the DI-5B42 without requiring an external power supply. The regulated supply will provide a nominal +20VDC at a loop current of 4mA to 20mA.

The DI-5B42 will provide a 1500V isolation barrier for non-isolated 2-wire field transmitters. It can also be used when additional isolation is required between an isolated 2-wire transmitter and the input stage of the control room computer.

The voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A precision 20Ω current conversion resistor is supplied with the module. All field inputs are fully protected from accidental connection of power-line voltages up to 240VAC. The module has a 3dB bandwidth of 100Hz. Signal filtering is accomplished with a six-pole filter, with two poles on the field side of the isolation barrier, and the other four on the computer side.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-5B42-01	4mA to 20mA	+1V to +5V

DI-5B43 Isolated DC Transducer Amplifier Input Module

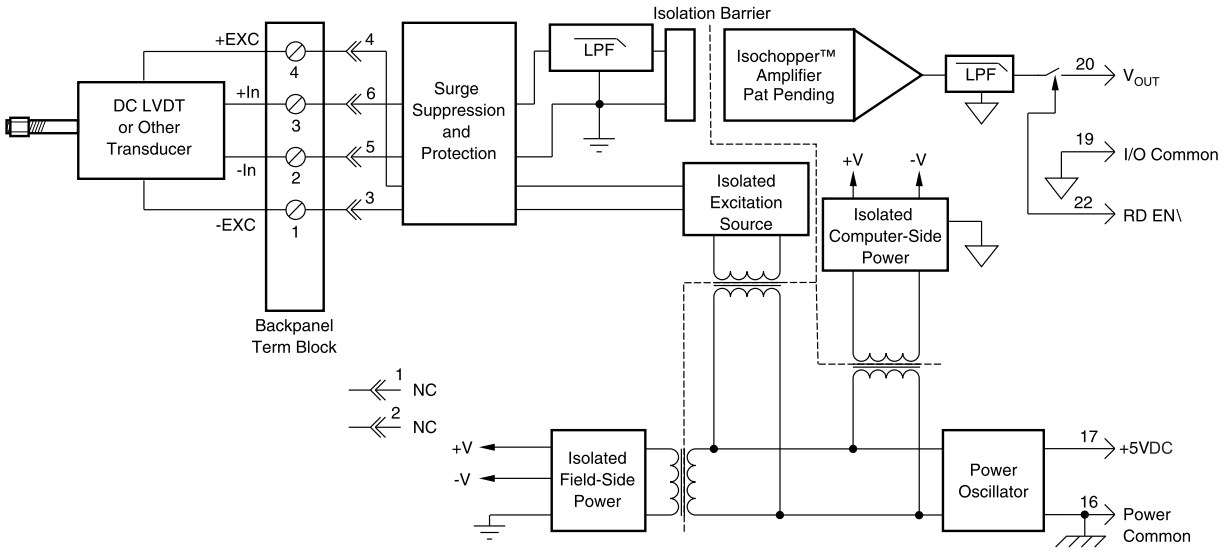
Each DI-5B43 displacement transducer module provides a single channel of displacement transducer input which is filtered, isolated, scaled, and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The DI-5B43 can interface to DC displacement transducers and other devices which require a precision 10VDC supply and produce a high level output. The 1kHz bandwidth significantly reduces ripple and noise inherent in these devices.

Transducer excitation is provided from the module by a very stable 10V source. The excitation supply is fully isolated, allowing the amplifier inputs to operate over the full range of the excitation voltage. This feature offers significant flexibility in real world applications. Ten full scale input ranges are provided, from ±1V to ±10V, producing ±5V full scale output.

The input signal is processed through a preamplifier on the field side of the isolation barrier. This preamplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 1kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%. Special input circuits on the DI-5B43 module provide protection of the signal inputs and the isolated excitation supply up to 240VAC.



Ordering Information		
MODEL*	MAXIMUM INPUT	EXCITATION
DI-5B43-01	±1V	+10.0Vdc @ 40mA
DI-5B43-02A	±2V	+10.0Vdc @ 40mA
DI-5B43-03	±3V	+10.0Vdc @ 40mA
DI-5B43-04A	±4V	+10.0Vdc @ 40mA
DI-5B43-05	±5V	+10.0Vdc @ 40mA
DI-5B43-06	±6V	+10.0Vdc @ 40mA
DI-5B43-07A	±7V	+10.0Vdc @ 40mA
DI-5B43-08A	±8V	+10.0Vdc @ 40mA
DI-5B43-09	±9V	+10.0Vdc @ 40mA
DI-5B43-10	±10V	+10.0Vdc @ 40mA

*CSA certification pending.

DI-5B45 Frequency Input Modules

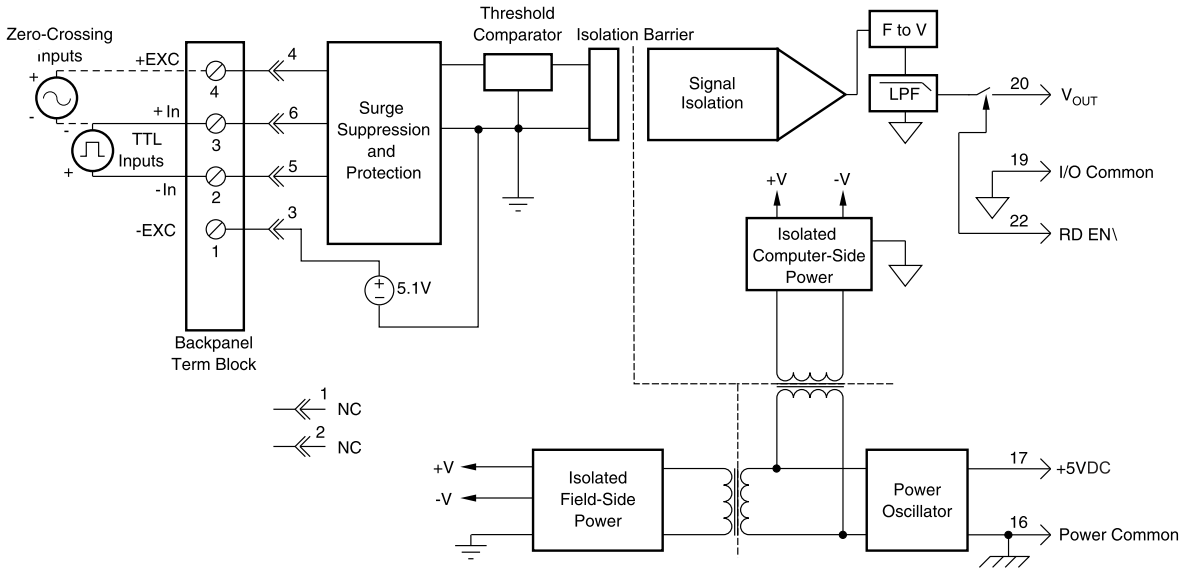
Each DI-5B45 frequency input module provides a single channel of frequency input which is isolated and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers (see block diagram).

The frequency input signal can be a TTL level signal or a zero-crossing signal. Terminal 3 (+In) on the field-side terminal block is the “common” or ground connection for input signals. A TTL signal is connected from terminal 2 (-In) to terminal 3 (+In), while a zero-crossing signal is connected from terminal 4 (+EXC) to terminal 3 (+In). Input circuitry for each of the signal types has hysteresis built in. An input signal must cross entirely through the hysteresis region in order to trigger the threshold comparator.

A 5.1V excitation is available for use with magnetic pickup or contact-closure type sensors. The excitation is available on pin 1 (-EXC) and the excitation common is pin 3 (+In).

The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A special circuit in the input stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information			
MODEL	INPUT RANGE	OUTPUT RANGE	EXCITATION
DI-5B45-01	0 to 500Hz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-02	0 to 1kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-03	0 to 3kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-04	0 to 5kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-05	0 to 10kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-06	0 to 25kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-07	0 to 50kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-08	0 to 100kHz	0 to +5V	+5.1Vdc @ 8mA

DI-5B47 Linearized Thermocouple Input Modules

Each DI-5B47 thermocouple input module provides a single channel of thermocouple input which is filtered, isolated, amplified, linearized and converted to a high level analog voltage output (see block diagram). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

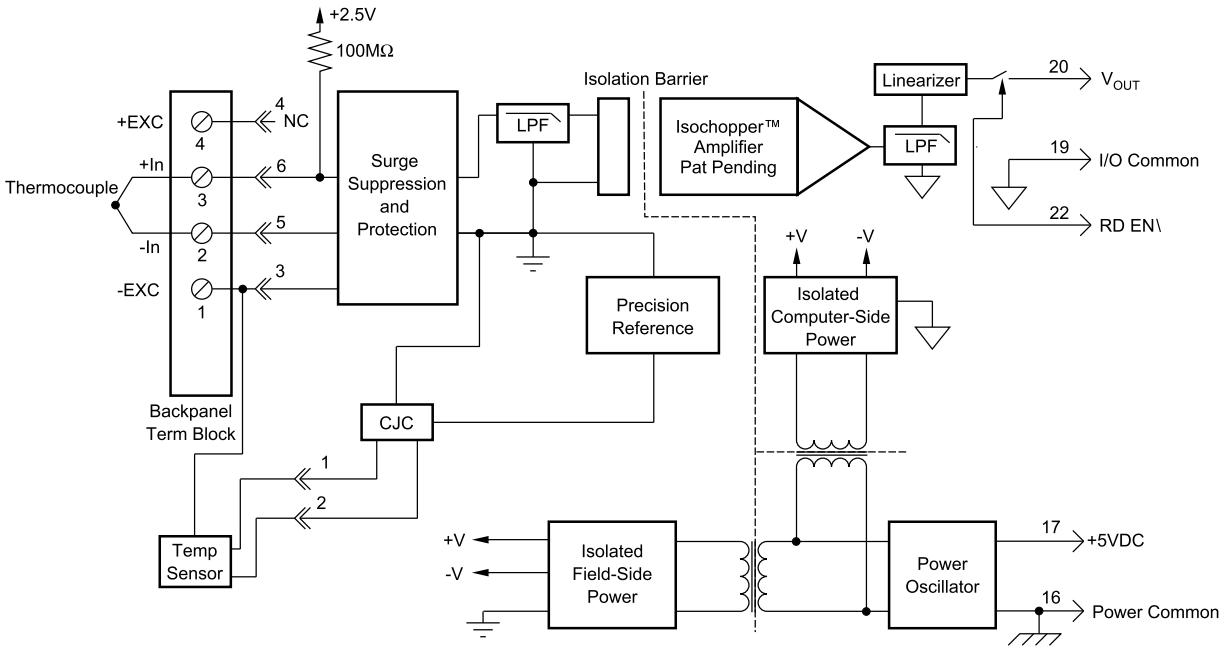
The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The DI-5B47 can interface to eight industry standard thermocouple types: J, K, T, E, R, S, N, and B. Its corresponding output signal operates over a 0 to +5V range. Each module is cold-junction compensated to correct for parasitic thermocouples formed by the thermocouple wire and screw terminals on the mounting hardware. Upscale open thermocouple detect is provided by an internal pull-up resistor. Downscale indication can be implemented by installing an external 47MΩ resistor, ±20% tolerance, between screw terminals 1 and 3.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special circuit in the input stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.



Ordering Information			
MODEL	TYPE	INPUT RANGE	ACCURACY*
DI-5B47J-01	Type J	0°C to +760°C (+32°F to +1400°F)	±0.61°C
DI-5B47J-02	Type J	-100°C to +300°C (-148°F to +572°F)	±0.32°C
DI-5B47J-03	Type J	0°C to +500°C (+32°F to +932°F)	±0.36°C
DI-5B47J-12**	Type J	-100°C to +760°C (-148°F to +1400°F)	±0.70°C
DI-5B47K-04	Type K	0°C to +1000°C (+32°F to +1832°F)	±0.80°C
DI-5B47K-05	Type K	0°C to +500°C (+32°F to +932°F)	±0.38°C
DI-5B47K-13**	Type K	-100°C to +1350°C (-148°F to +2462°F)	±1.20°C
DI-5B47K-14**	Type K	0°C to +1200°C (+32°F to +2192°F)	±0.96°C

*Includes conformity, hysteresis and repeatability. Does not include CJC accuracy.

**CSA certification pending.

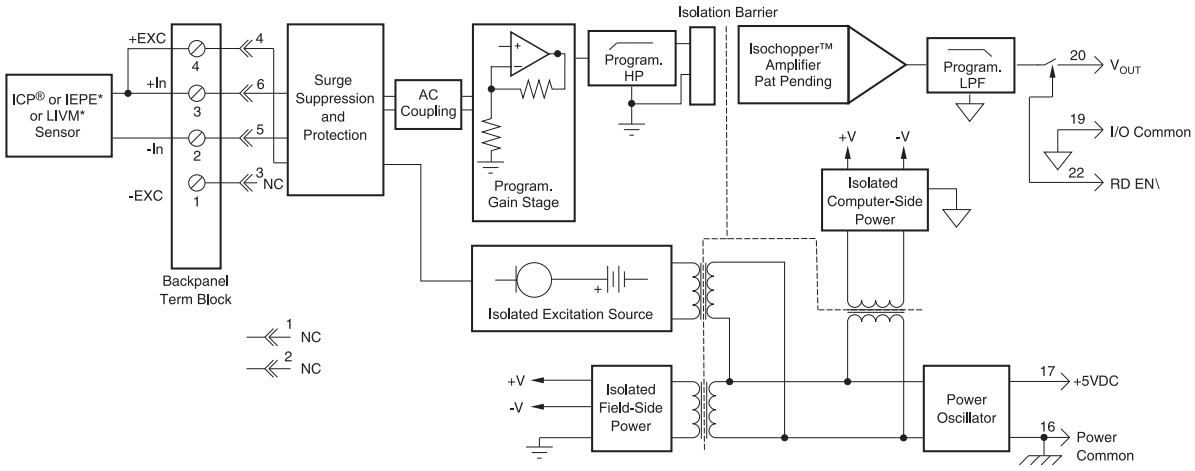
DI-5B48 Accelerometer Input Modules

The DI-5B48 provides excitation to piezoelectric sensors with built-in microelectronic amplifiers, commonly known as ICP®* or IEPE or LIVM sensors. The module provides a constant current excitation to the sensor, then isolates, filters, and amplifies the sensor output, yielding a high-level analog voltage output. The excitation current, signal gain, and filter high-pass and low-pass cutoff frequencies are field-configurable through a set of slide switches.

Six poles of signal filtering in the DI-5B48 module result in greater than 100dB of normal-mode rejection for signal frequencies above the cutoff frequency. One pole of filtering is on the field side of the isolation barrier for anti-aliasing purposes and the remaining five-pole programmable Bessel filter is located on the system side. High-pass filtering is achieved through a second order passive filter, located on the field side. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin, to I/O Common, pin 19.

The DI-5B48 offers the option of setting the constant current source for sensor excitation to common values of 4mA or 9mA with a compliance voltage of 24VDC. Programmable gains of 1, 10 and 100 are selectable and the module offers a ±10V output. The required supply level is +5VDC, ±5%.

To ensure protection of expensive data acquisition equipment, the DI-5B48 module signal inputs and sensor excitation outputs are protected against accidental connection of voltages up to 240Vrms.



Ordering Information				
MODEL	INPUT RANGE	OUTPUT RANGE	BANDWIDTH	ISOLATION VOLTAGE
DI-5B48-01	±10V max	±10V	2.5kHz to 20kHz	1500

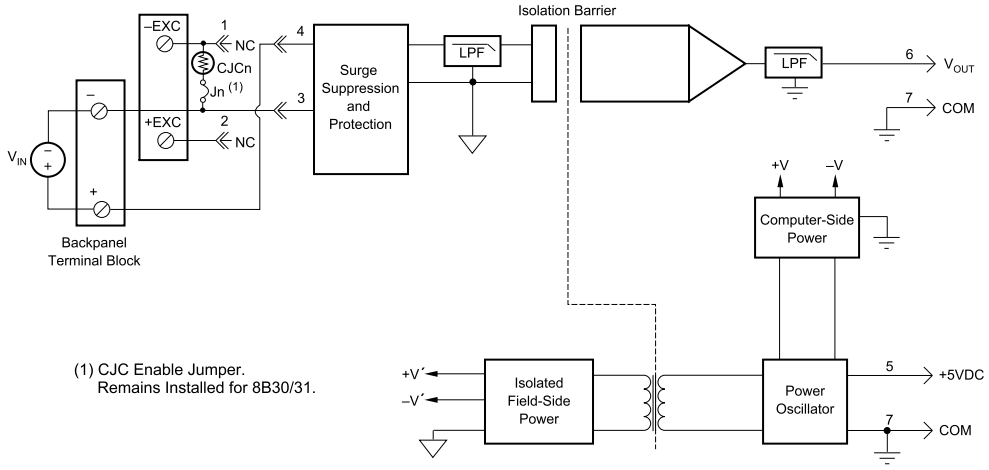
DI-8B30/31 Analog Voltage Input Modules, 3Hz Bandwidth

Each DI-8B30 or DI-8B31 module isolates, filters and amplifies a voltage input signal and provides an analog voltage output.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B30 and DI-8B31 modules provides protection against accidental connection of power-line voltages up to 240VAC.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



:

Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B30-01	-10mV to +10mV	-5V to +5V
DI-8B30-02	-50mV to +50mV	-5V to +5V
DI-8B30-03	-100mV to +100mV	-5V to +5V
DI-8B31-01	-1V to +1V	-5V to +5V
DI-8B31-02	-5V to +5V	-5V to +5V
DI-8B31-03	-10V to +10V	-5V to +5V
DI-8B31-07	-20V to +20V	-5V to +5V
DI-8B31-09	-40V to +40V	-5V to +5V
DI-8B31-12	-60V to +60V	-5V to +5V

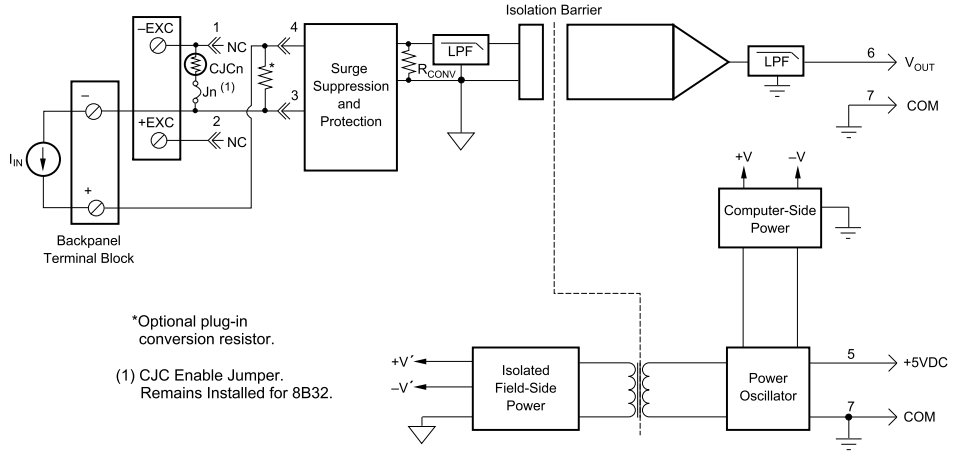
DI-8B32 Analog Current Input Modules

Each DI-8B32 module isolates, filters and amplifies a process current input signal and provides an analog voltage output.

Current to voltage conversion is accomplished internal to the module to ensure high accuracy.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the 8B32 module provides protection against accidental connection of power-line voltages up to 30VAC. Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B32-01	4mA to 20mA	0V to +5V
DI-8B32-02	0mA to 20mA	0V to +5V

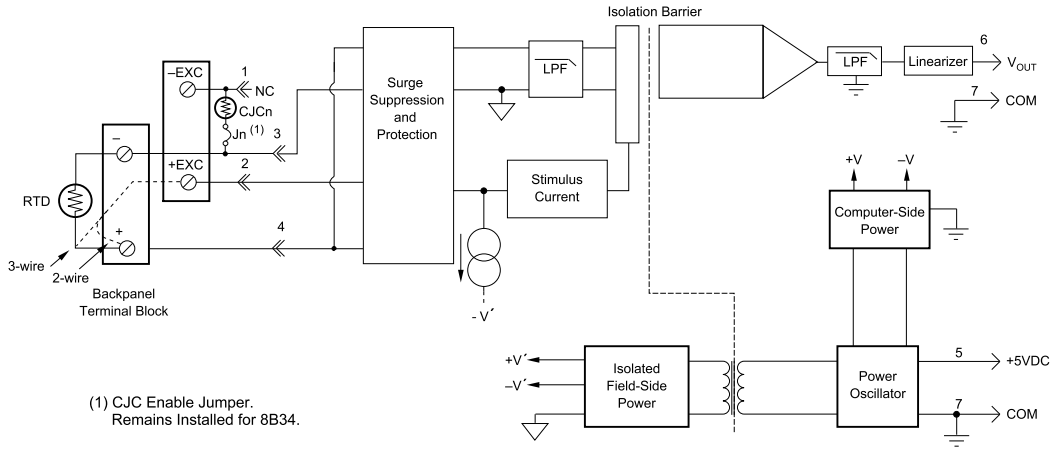
DI-8B34 Linearized 2- or 3-Wire RTD Input Modules

Each DI-8B34 module isolates, filters, amplifies, and linearizes a single channel of temperature input from an RTD and provides an analog voltage output.

RTD excitation is provided from the module using two matched current sources. When using a 3-wire connection, this method allows equal currents to flow through the sensor leads, cancelling the effects of lead resistances. The excitation currents are small (0.25mA) which minimizes the self-heating of the RTD.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B34 module provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.



Ordering Information			
MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY*
DI-8B34-01	-100°C to +100°C (-148°F to +212°F)	0V to +5V	±0.20°C
DI-8B34-02	0°C to +100°C (+32°F to +212°F)	0V to +5V	±0.15°C
DI-8B34-03	0°C to +200°C (+32°F to +392°F)	0V to +5V	±0.20°C
DI-8B34-04	0°C to +600°C (+32°F to +1112°F)	0V to +5V	±0.45°C

* Includes conformity, hysteresis and repeatability.

DI-8B35 Linearized 4-Wire RTD Input Modules

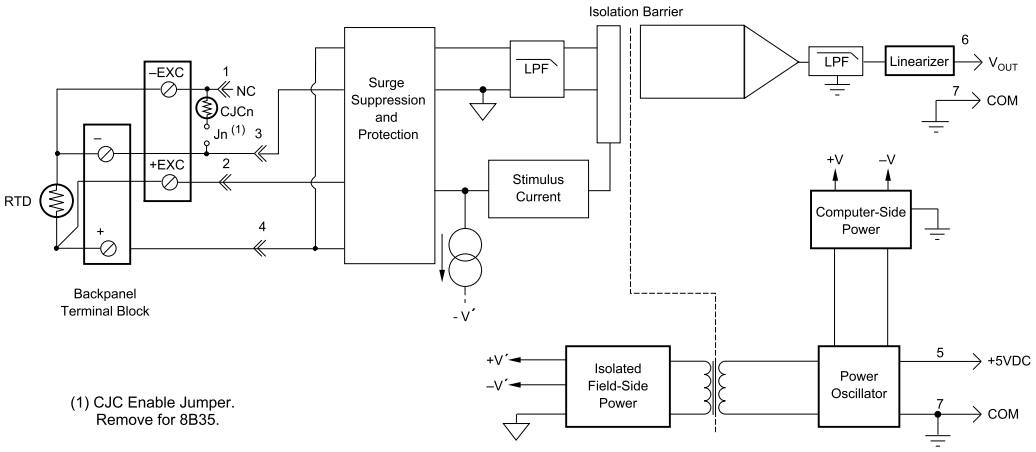
In RTD temperature measurement applications requiring a very high level of accuracy, the DI-8B35 4-Wire RTD input module offers a significant advantage over 3-wire measurement techniques (see block diagram). The DI-8B35 measures only the voltage dropped across the RTD and almost completely ignores the resistance or length of the RTD lead wires. The DI-8B34 3-Wire RTD module provides lead resistance compensation, but requires equal lead resistances, while the DI-8B35 does not require matched lead resistances.

Each DI-8B35 module isolates, filters, amplifies, and linearizes a single channel of temperature input from an RTD and provides an analog voltage output.

RTD excitation is provided from the module using a precision current source. Excitation current does not flow in the input signal leads, which allows RTD measurements to be made independent of lead resistance. The excitation currents are small (0.25mA) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B35 module provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.



Ordering Information			
MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY*
DI-8B35-01	-100°C to +100°C (-148°F to +212°F)	0V to +5V	±0.20°C
DI-8B35-02	0°C to +100°C (+32°F to +212°F)	0V to +5V	±0.15°C
DI-8B35-03	0°C to +200°C (+32°F to +392°F)	0V to +5V	±0.20°C
DI-8B35-04	0°C to +600°C (+32°F to +1112°F)	0V to +5V	±0.45°C

* Includes conformity, hysteresis and repeatability.

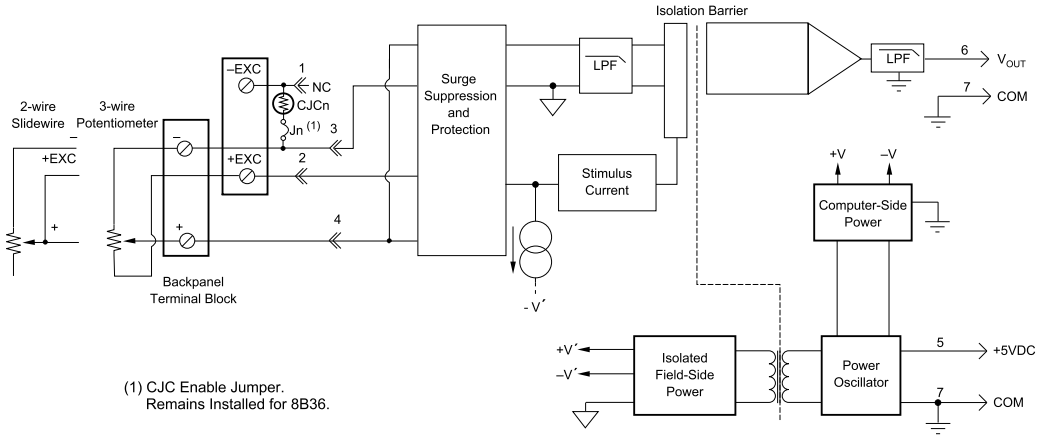
DI-8B36 Potentiometer Input Modules

Each DI-8B36 module isolates, filters and amplifies a single channel of potentiometer input and provides an analog voltage output.

Excitation for the potentiometer is provided by using two matched current sources. When using a 3-wire connection, this method allows equal currents to flow through the sensor leads, cancelling the effects of lead resistances. The excitation currents are small (0.25mA) which minimizes the self-heating of the potentiometer.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B36 module provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B36-01	0 to 100Ω	0V to +5V
DI-8B36-02	0 to 500Ω	0V to +5V
DI-8B36-03	0 to 1kΩ	0V to +5V
DI-8B36-04	0 to 10kΩ	0V to +5V

DI-8B38 Strain Gage Input Modules, Narrow & Wide Bandwidth

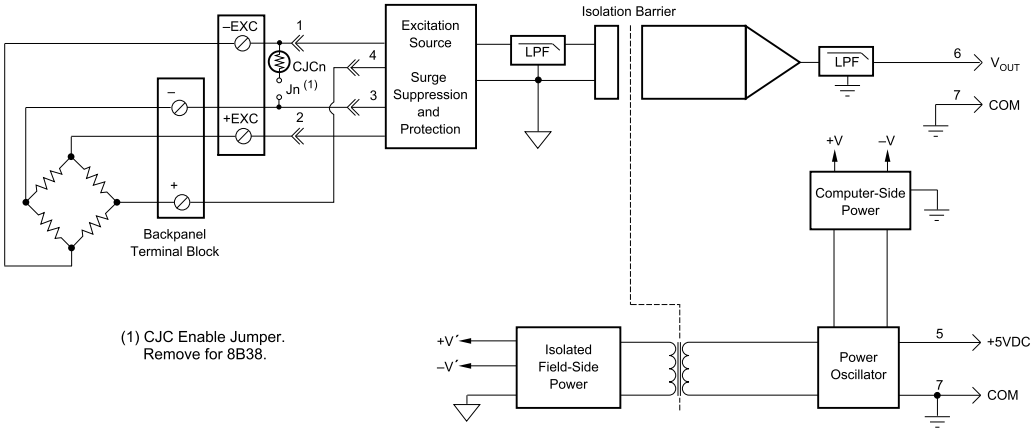
Each DI-8B38 module isolates, filters and amplifies a full-bridge strain gage input signal and provides an analog voltage output.

The 8B38 can interface to transducers with a nominal resistance of 100 to 10k. Bridge excitation is provided from the module with a stable 10.00V or 3.33V source. Full scale sensitivities of 2mV/V and 3mV/V are offered as standard.

Signal filtering is accomplished with a five-pole filter optimized for time and frequency response which provides 100dB per decade of normal-mode rejection above the filter cutoff frequency. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other four are on the system side.

A special input circuit on the DI-8B38 module provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



Ordering Information				
MODEL	BANDWIDTH	INPUT RANGE	EXCITATION	OUTPUT RANGE
DI-8B38-01	3kHz	-10mV to +10mV	3.333V at 3mV/V Sensitivity	-5V to +5V
DI-8B38-02	3kHz	-30mV to +30mV	10.0V at 3mV/V Sensitivity	-5V to +5V
DI-8B38-05	3kHz	-20mV to +20mV	10.0V at 2mV/V Sensitivity	-5V to +5V
DI-8B38-31	3Hz	-10mV to +10mV	3.333V at 3mV/V Sensitivity	-5V to +5V
DI-8B38-32	3Hz	-30mV to +30mV	10.0V at 2mV/V Sensitivity	-5V to +5V
DI-8B38-35	3Hz	-20mV to +20mV	10.0V at 2mV/V Sensitivity	-5V to +5V

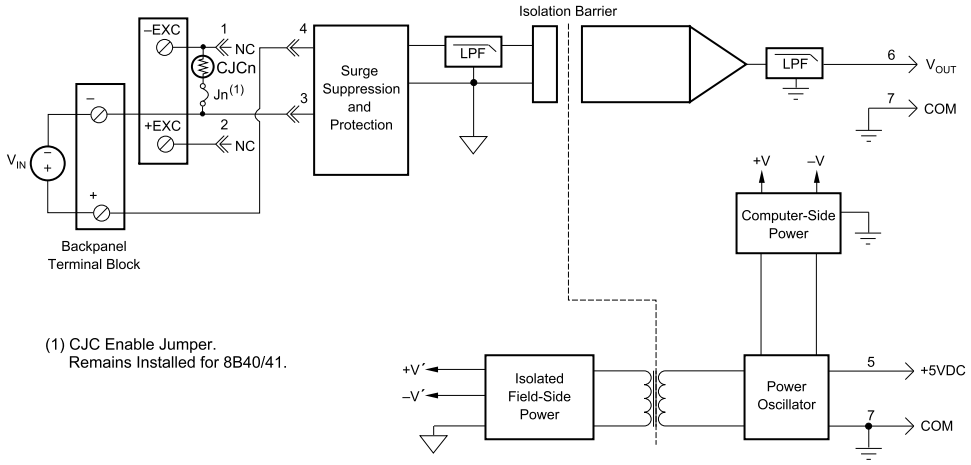
DI-8B40/41 Analog Voltage Input Modules, 1kHz Bandwidth

Each DI-8B40 and DI-8B41 module isolates, filters, and amplifies a voltage input signal and provides an analog voltage output.

Signal filtering is accomplished with a multiple pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the remaining poles are on the system side.

A special input circuit on the DI-8B40 and DI-8B41 modules provides protection against accidental connection of power-line voltages up to 240VAC. Clamp Circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B40-01	-10mV to +10mV	-5V to +5V
DI-8B40-02	-50mV to +50mV	-5V to +5V
DI-8B40-03	-100mV to +100mV	-5V to +5V
DI-8B41-01	-1V to +1V	-5V to +5V
DI-8B41-02	-5V to +5V	-5V to +5V
DI-8B41-03	-10V to +10V	-5V to +5V
DI-8B41-07	-20V to +20V	-5V to +5V
DI-8B41-09	-40V to +40V	-5V to +5V
DI-8B41-12	-60V to +60V	-5V to +5V

DI-8B42 2-Wire Transmitter Interface Modules

Note: The DI-8B42 is scheduled for a 3Q 2007 release.

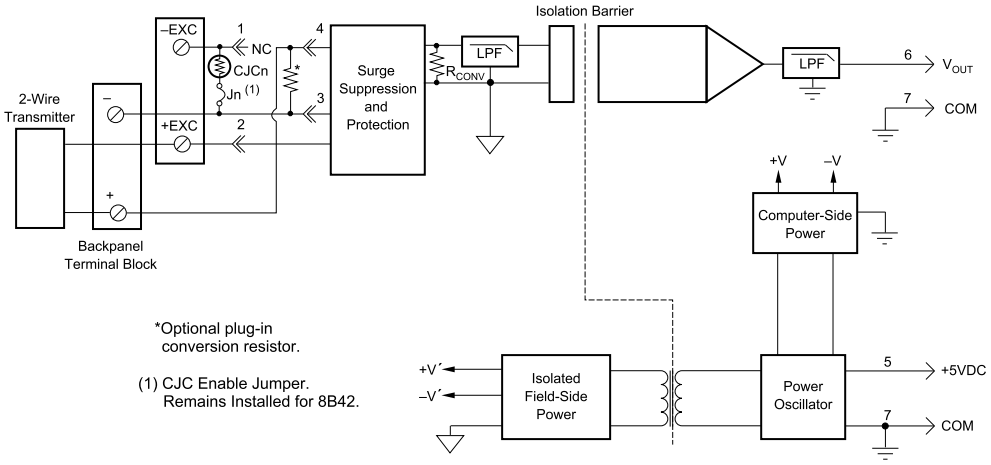
Each DI-8B42 module provides power to a current transmitter, then isolates, filters and amplifies the resulting process current input signal and provides an analog voltage output.

Current to voltage conversion is accomplished internal to the module to ensure high accuracy.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 60dB per decade of normal-mode rejection above 100Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B42 module provides protection against accidental connection of power-line voltages up to 40VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B42-01	4mA to 20mA	0V to +5V
DI-8B42-02	4mA to 20mA	+1V to +5V

DI-8B45 Frequency Input Modules

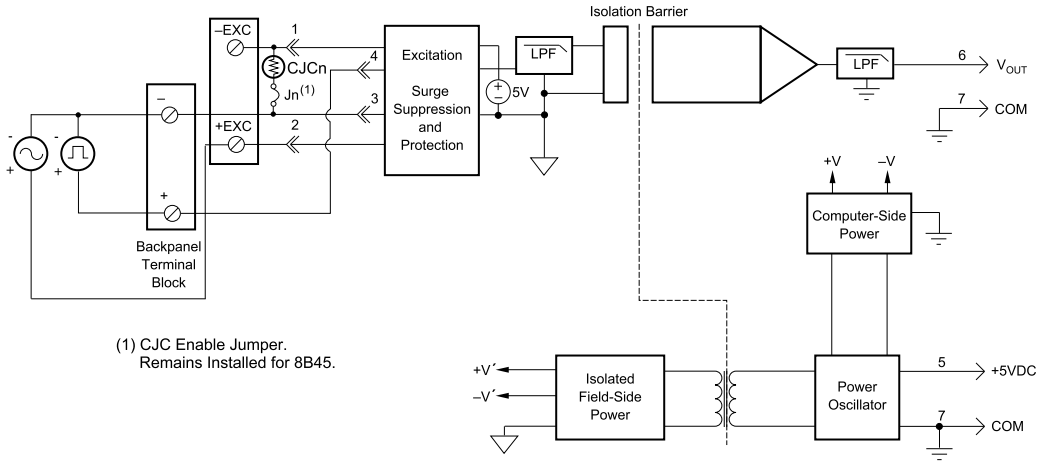
Each DI-8B45 module isolates and conditions a frequency input signal and provides an analog voltage output.

The frequency input signal can be either a TTL level or zero crossing with as little as ±100mV amplitude. Input circuitry for each signal type has built-in hysteresis to prevent spurious noise from corrupting the module output. TTL signals are applied to the + and - terminals while zero crossing signals are applied to the +EXC and - terminals. Reference the block diagram.

A 5V excitation is available for use with magnetic pick-up or contact closure type sensors. The excitation is available on the -EXC terminal with return on the - terminal.

A special input circuit on the DI-8B45 modules provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.



Ordering Information			
MODEL	INPUT RANGE	OUTPUT RANGE	EXCITATION
DI-8B45-01	0 to 500Hz	0 to +5V	+5V at 8mA max
DI-8B45-02	0 to 1kHz	0 to +5V	+5V at 8mA max
DI-8B45-03	0 to 2.5kHz	0 to +5V	+5V at 8mA max
DI-8B45-04	0 to 5kHz	0 to +5V	+5V at 8mA max
DI-8B45-05	0 to 10kHz	0 to +5V	+5V at 8mA max
DI-8B45-06	0 to 25kHz	0 to +5V	+5V at 8mA max
DI-8B45-07	0 to 50kHz	0 to +5V	+5V at 8mA max
DI-8B45-08	0 to 100kHz	0 to +5V	+5V at 8mA max

DI-8B47 Linearized Thermocouple Input Modules

Each DI-8B47 module isolates, filters, amplifies, and linearizes a single channel of temperature input from a thermocouple and provides an analog voltage output.

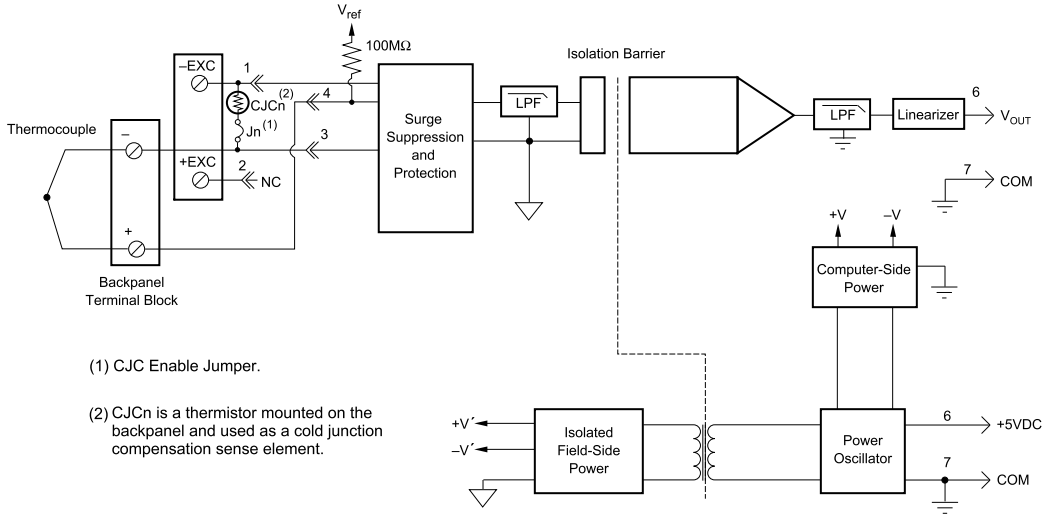
Linearization is accomplished using a four breakpoint piece wise linear approximation.

The DI-8B47 can interface to industry standard thermocouple type J, K, and T and has an output signal of 0V to +5V. Each module is cold-junction compensated to correct for parasitic thermocouples formed by the thermocouple wire and screw terminals on the mounting backpanel. Upscale open thermocouple detect is provided by an internal pull-up resistor.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the other two are on the system side.

A special input circuit on the DI-8B47 module provides protection against accidental connection of power-line voltages up to 240VAC.

Note: The temperature accuracy of these thermocouple modules when used with the DI-78B is ±2ºC @25ºC.



Ordering Information			
MODEL	TYPE	INPUT RANGE	ACCURACY*
DI-8B47J-01	Type J	0°C to +760°C (+32°F to +1400°F)	±0.24% ±1.82°C
DI-8B47J-02	Type J	-100°C to +300°C (-148°F to +572°F)	±0.24% ±0.96°C
DI-8B47J-03	Type J	0°C to +500°C (+32°F to +932°F)	±0.21% ±1.05°C
DI-8B47J-12	Type J	-100°C to +760°C (-148°F to +1400°F)	±0.24% ±2.10°C
DI-8B47K-04	Type K	0°C to +1000°C (+32°F to +1832°F)	±0.24% ±2.40°C
DI-8B47K-05	Type K	0°C to +500°C (+32°F to +932°F)	±0.24% ±1.05°C
DI-8B47K-13	Type K	-100°C to +1350°C (-148°F to +2462°F)	±0.24% ±3.60°C
DI-8B47K-14	Type K	0°C to +1200°C (+32°F to +2192°F)	±0.24% ±2.88°C
DI-8B47T-06	Type T	-100°C to +400°C (+32°F to +392°F)	±0.48% ±2.40°C
DI-8B47T-07	Type T	0°C to +200°C (+32°F to +392°F)	±0.39% ±0.75°C

*Includes conformity, hysteresis and repeatability. Does not include CJC accuracy.

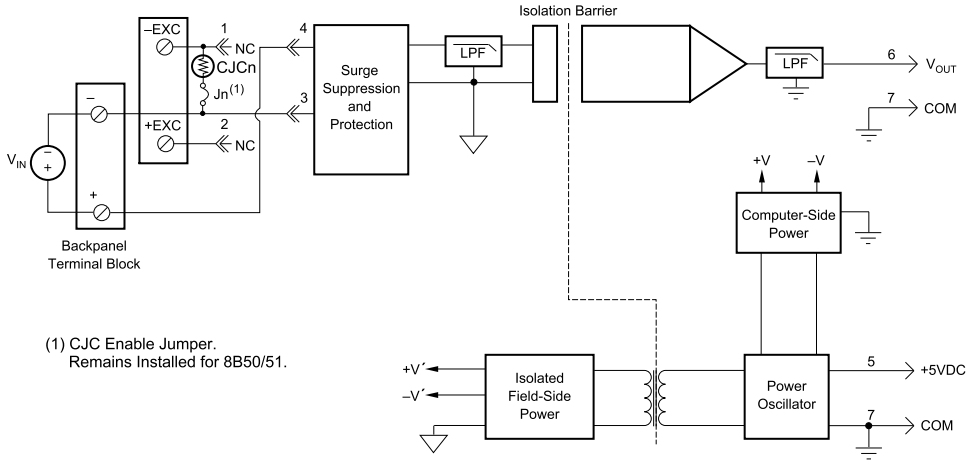
DI-8B50/51 Analog Voltage Input Modules, 20kHz Bandwidth

Each DI-8B50 and DI-8B51 module isolates, filters, and amplifies a voltage input signal and provides an analog voltage output.

Signal filtering is accomplished with a multiple pole filter optimized for time and frequency response which provides 70dB of normal-mode-rejection at 60Hz. One pole of this filter is on the field side of the isolation barrier for anti-aliasing, and the remaining poles are on the system side.

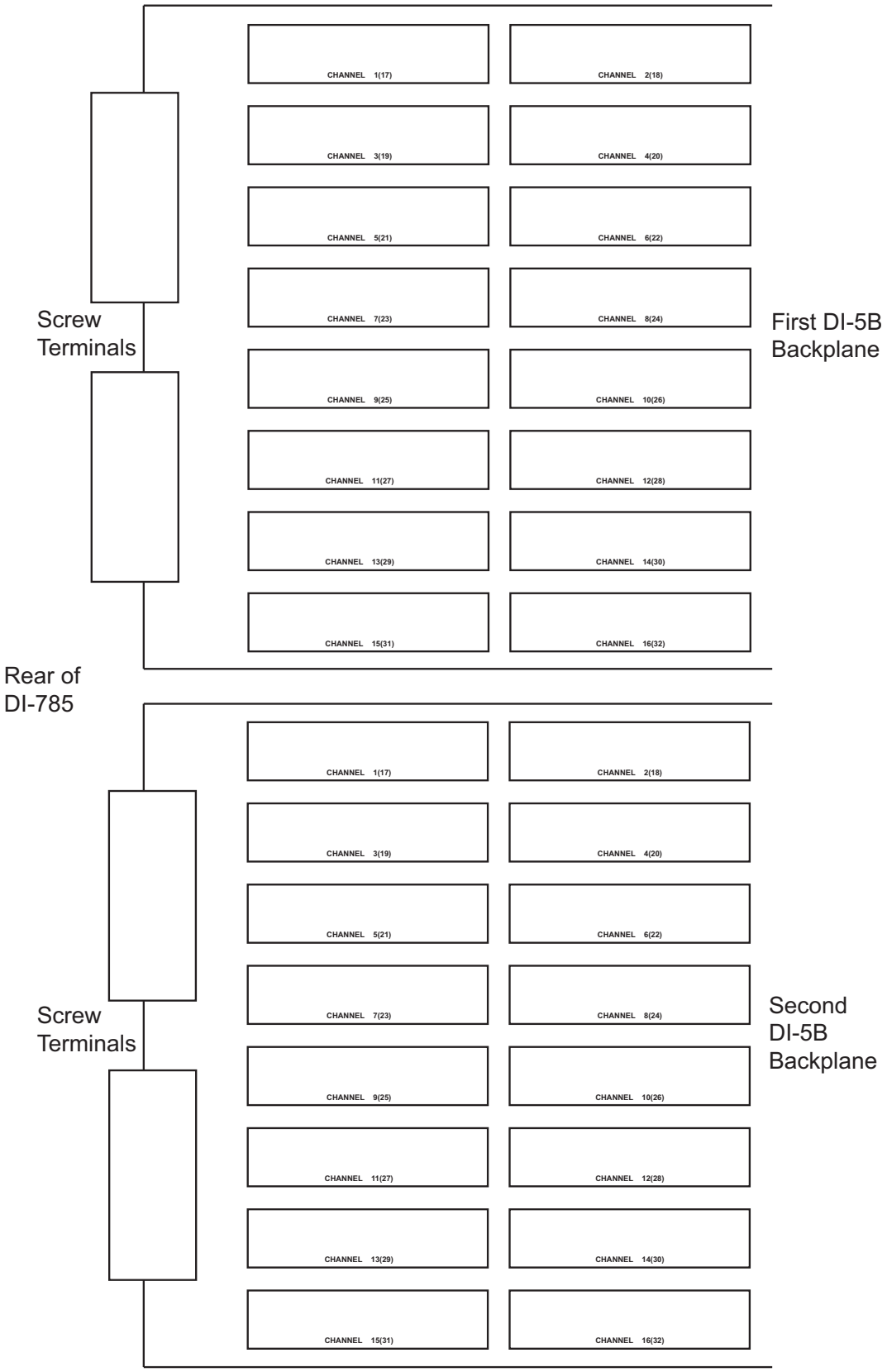
A special input circuit on the DI-8B50 and DI-8B51 modules provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

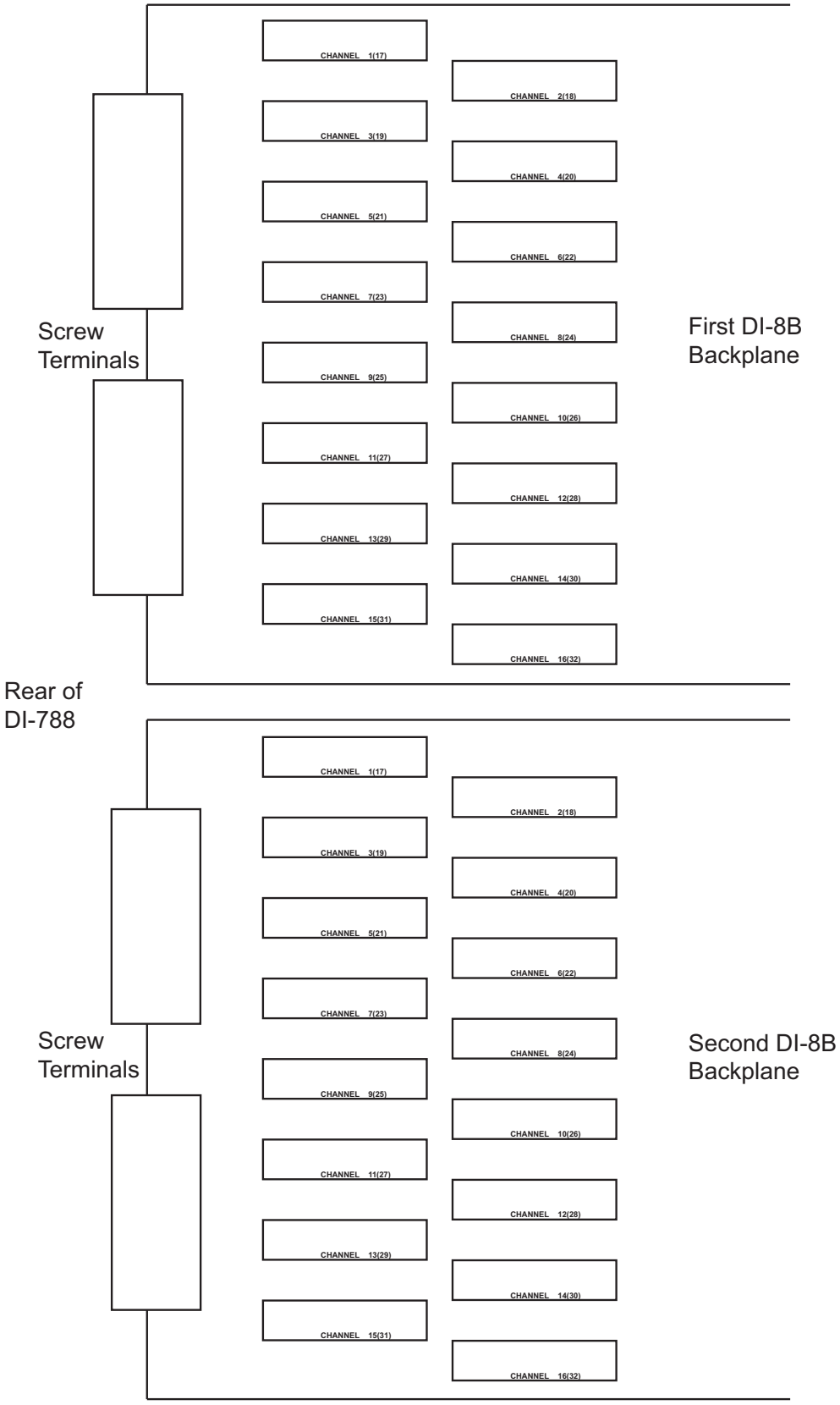


Ordering Information		
MODEL	INPUT RANGE	OUTPUT RANGE
DI-8B50-01	-10mV to +10mV	-5V to +5V
DI-8B50-02	-50mV to +50mV	-5V to +5V
DI-8B50-03	-100mV to +100mV	-5V to +5V
DI-8B51-01	-1V to +1V	-5V to +5V
DI-8B51-02	-5V to +5V	-5V to +5V
DI-8B51-03	-10V to +10V	-5V to +5V
DI-8B51-07	-20V to +20V	-5V to +5V
DI-8B51-09	-40V to +40V	-5V to +5V
DI-8B51-12	-60V to +60V	-5V to +5V

Appendix A1: DI-5B Modules Installed



Appendix A2: DI-8B Modules Installed



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